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State-Licensed Disposal Area at West Valley: 2015 Annual Report

Final Report

March 2016

NYSERDA's Promise to New Yorkers:

NYSERDA provides resources, expertise, and objective information so New Yorkers can make confident, informed energy decisions.

Mission Statement:

Advance innovative energy solutions in ways that improve New York's economy and environment.

Vision Statement:

Serve as a catalyst – advancing energy innovation, technology, and investment; transforming New York's economy; and empowering people to choose clean and efficient energy as part of their everyday lives.

State-Licensed Disposal Area at West Valley:

2015 Annual Report

Prepared by:

New York State Energy Research and Development Authority

West Valley Site Management Program

West Valley, NY

March 2016

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Acronyms and Abbreviations List

AMSL	Above Mean Sea Level
BGS	Below Ground Surface
BOD	Biological Oxygen Demand
CMS	Corrective Measures Study
COD	Chemical Oxygen Demand
Consent Order	Administrative Order on Consent
Deg C	Degrees Celsius
ft	Feet
GMP	Groundwater Monitoring Plan for the State-Licensed Disposal Area (SDA) at West Valley
IM	Interim Measure
LiDAR	Light Detection and Ranging
LMP	Leachate Monitoring Plan for the State-Licensed Disposal Area (SDA) at West Valley
MDC	Minimum Detectable Concentration
mg/L	Milligrams per Liter
mR/Qtr	Milliroentgens per Quarter
NAD	North American Datum
NGVD	National Geodetic Vertical Datum
NDA	Nuclear Regulatory Commission-Licensed Disposal Area
NRC	Nuclear Regulatory Commission
NTU	Nephelometric Turbidity Unit
NYCRR	New York State Codes, Rules & Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSERDA	New York State Energy Research and Development Authority
RCP	Radiation Control Program
RCRA	Resource Conservation and Recovery Act
SDA	State-Licensed Radioactive Waste Disposal Area
SPDES	State Pollution Discharge Elimination System
Temp	Temperature
TKN	Total Kjeldahl Nitrogen
TLD	Thermoluminescent Dosimeter
TSS	Total Suspended Solids
µCi/mL	Microcuries per Milliliter
µrem	Microrem (Roentgen Equivalent Man)
µmhos/cm	Micromhos per Centimeter
USEPA	United States Environmental Protection Agency
UPL	Upper Predictive Limit
UTL	Upper Tolerance Limit
VLDPE	Very-Low Density Polyethylene
VOC	Volatile Organic Compound
WNYNSC	Western New York Nuclear Service Center
WVDP	West Valley Demonstration Project
WVSMP	West Valley Site Management Program
XR-5	Ethylene Interpolymer Alloy Geomembrane

Executive Summary

The New York State Energy Research and Development Authority (NYSERDA) maintains and monitors the State-Licensed Radioactive Waste Disposal Area (SDA) to protect public health, safety and the environment. This report summarizes the results of environmental monitoring, erosion monitoring, facility operations and maintenance, and waste management activities conducted during calendar year 2015 at the SDA, which is located at the Western New York Nuclear Service Center (WNYNSC).

The 2015 environmental monitoring data (from groundwater, surface water, stormwater, and gamma radiation measurements) indicate radioactive and/or chemical constituents in the SDA trenches are being effectively contained. In addition, inspections indicate that the SDA trench caps remain stable.

The subsurface barrier wall along the west side of the southern trenches and the geomembrane cover are generally effective at keeping water out of the SDA trenches, although an increase in Trench 14, a very slight increase in Trench 1 and a potential change in Trench 3 are being evaluated. NYSERDA's monitoring data and the ongoing evaluations show that the current water levels in these trenches are not a public health and safety concern.

The erosion control measures are keeping the slopes surrounding the SDA stable, and the West Valley Site Management Program (WVSMP) operations and maintenance actions continue to keep the SDA systems functioning properly, and the grounds in good condition.

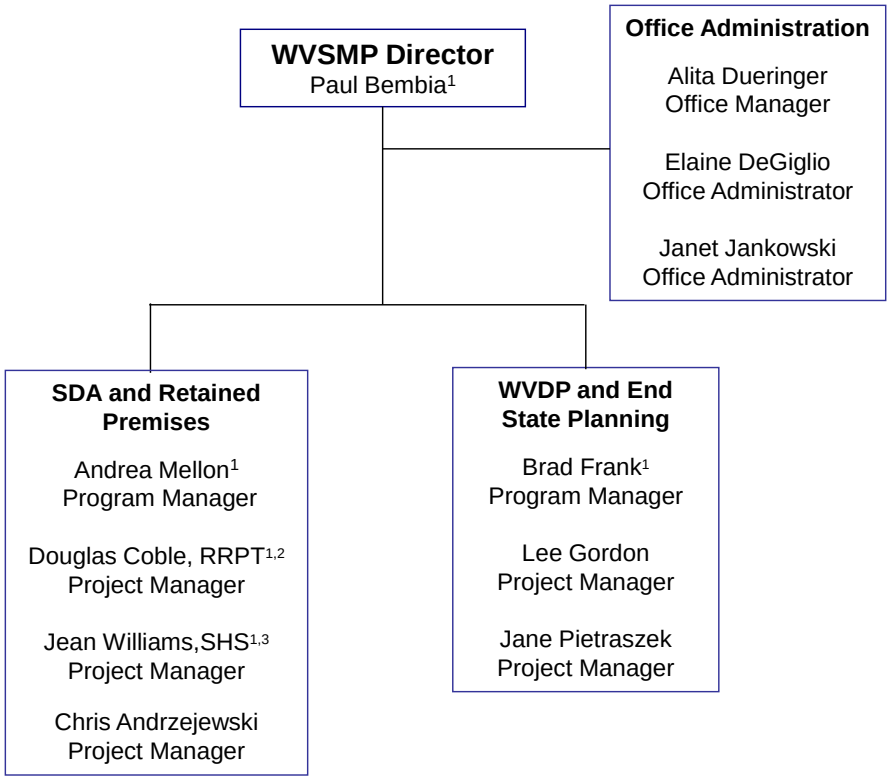
This report is prepared in accordance with the New York State Department of Environmental Conservation (NYSDEC) radiation control regulations and the SDA radiation control program (RCP). Annual reporting requirements are specified in:

- Title 6 of the Official Compilation of Codes, Rules, and Regulations of the State of New York (6 NYCRR) Part 380, Rules and Regulations for the Prevention and Control of Environmental Pollution by Radioactive Materials, February 2, 2002.
- NYSDEC RCP #137-6, Permit No. 9-0422-00011/00011, March 13, 2015.

Part 380 Permit inspections were conducted on June 23 and 24, 2015, and on November 19, 2015. The inspections included records review, visual walkover inspection of the facility and surrounding slopes and streams, and surface water and soil sample collection. The inspector noted that NYSERDA operations at the SDA were in compliance with the Part 380 regulations and the conditions of the permit.

S.1 West Valley Site Management Program

NYSERDA's WVSMP is responsible for the monitoring and maintenance, and the protection of public health, safety and the environment at the WNYNSC. The WVSMP is comprised of 11 professionals with diverse talents and expertise. The mission of the WVSMP is to be responsible stewards of the WNYNSC, including the SDA, by using objective analysis, and soliciting multiple perspectives to identify, assess and implement effective, enduring approaches to protect the environment, and the well-being of our workers and neighbors



1 Radiation Safety Committee Member
2 Radiation Safety Officer
3 Safety & Health Supervisor

1 SDA Description

The SDA occupies approximately 15 acres of the WNYNSC (Figure 1-1) immediately adjacent to the West Valley Demonstration Project (WVDP). The SDA consists of three filled lagoons and two sets of parallel trenches that contain radioactive waste: 1 through 7 in the northern area and 8 through 14 in the southern area (see Figure 1-2). The SDA is surrounded by an eight-foot-high, chain-link fence. NYSERDA controls access to the SDA by limiting the issuance of keys to the five, locked SDA gates. In addition, a contracted security service conducts routine patrols of the SDA's perimeter.

Between 1963 and 1975, Nuclear Fuel Services, Inc. (the SDA operator at that time), placed approximately 2.4 million cubic feet (ft) of radioactive waste in trenches constructed in the native silty-clay soil. These trenches are 450 to 650 ft in length and are approximately 20 ft deep. Trench cross-sections are trapezoidal in shape, with a top width of 35 ft and a bottom-floor width of 20 ft. During construction, the trench floors were sloped along their length to allow water to drain to a low point where a trench sump was located. A vertical pipe, which extends from above the trench cap to each sump, provides a way to routinely monitor trench water elevations. The sump pipe also serves as a conduit through which water can be sampled or removed from the trenches. Each trench is covered with an eight- to 10-ft-thick mounded cap of compacted clay, and a drainage swale is located between adjacent trenches to direct precipitation away from the trenches.

Differing in both physical form and construction from other trenches, Trenches 6 and 7 were built to hold high-activity wastes that required immediate shielding. Trench 6 is a series of individual holes in which waste was placed, while Trench 7 is a narrow, shallow trench where waste containers were placed and encased in concrete. A sump was not installed in either of these two trenches.

Each trench is covered with an eight- to 10-ft-thick mounded cap of compacted clay, and a drainage swale is located between adjacent trenches to direct precipitation away from the trenches. Efforts to minimize erosion of the clay caps and infiltration of water into the trenches began in the late 1970s and early 1980s. These efforts included rolling and reseeding the trench caps as well as several larger-scale regrading, recapping and water infiltration controls projects. Rising water elevations in Trenches 13 and 14 led NYSERDA to investigate additional water management measures, and, in 1990, NYSERDA began implementing several projects aimed at reducing water accumulation in the SDA trenches.

Figure 1-1. Map of the Western New York Nuclear Service Center

Source: NYSERDA

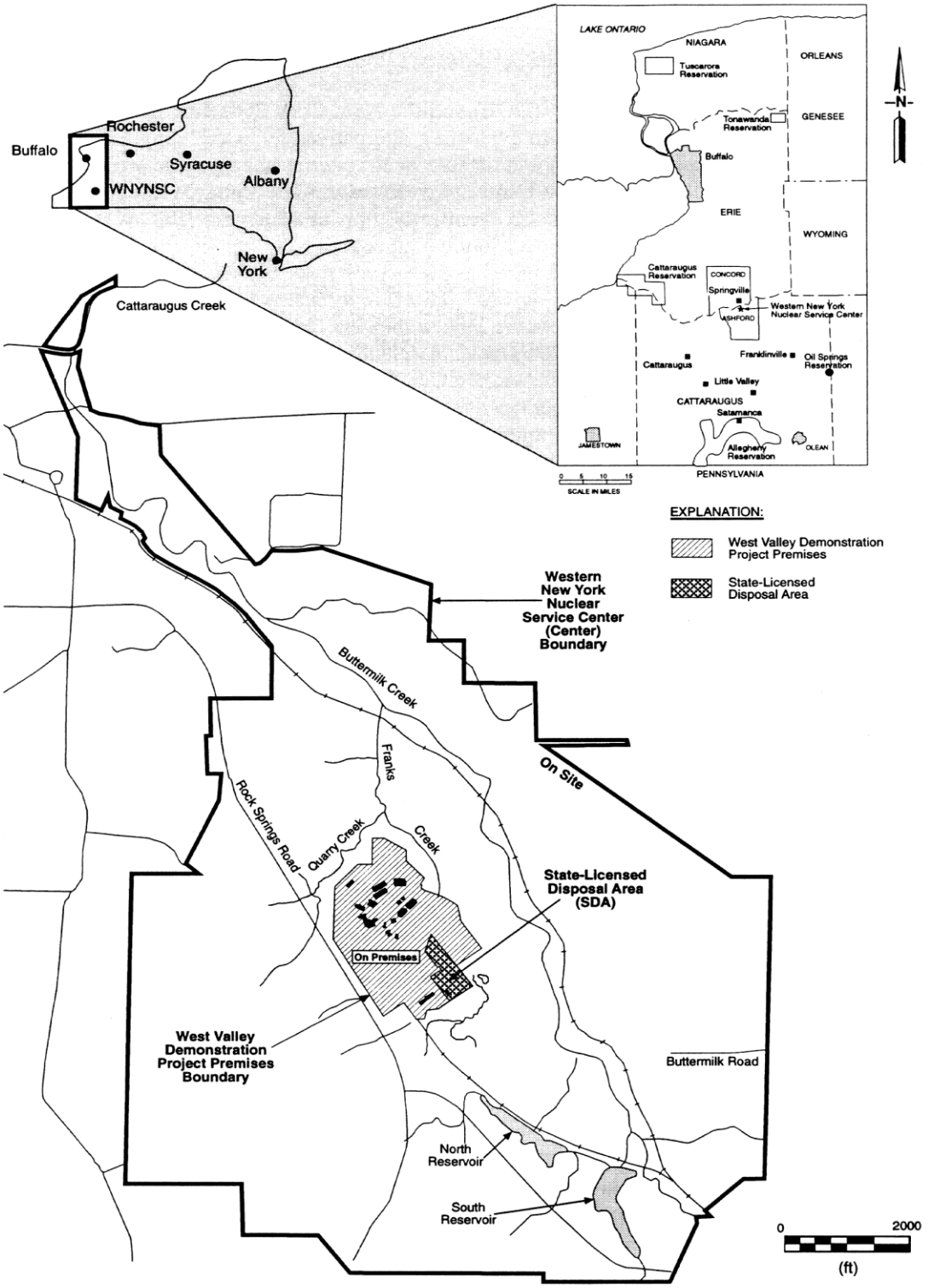


Figure 1-2. Aerial Photograph of the State-Licensed Disposal Area

Source: NYSERDA

1.1 Leachate Management

Between 1990 and 1991, NYSERDA installed three tanks in two adjoining buildings at the SDA. In 1991, 8,000 gallons of leachate were pumped from Trench 14 into a 9,200-gallon fiberglass tank, located in the smaller of the two buildings. In 2009, the 8,000 gallons of leachate were removed from the fiberglass tank, placed in U.S. Department of Transportation-approved shipping containers, and shipped to a licensed and permitted treatment and disposal facility. The empty tank was removed in 2010 and shipped to a licensed facility for off-site disposal.

NYSERDA received certification of clean closure from NYSDEC when the portion of the Leachate Treatment Facility (SDA Solid Waste Management Unit No. 5) that stored mixed waste (i.e., leachate and Tank T-1) was removed, shipped and treated, and the facility was sampled for confirmation that it was free of hazardous waste. Subsequently, NYSDEC approved NYSERDA's Protective Filer Certification for the unused portion of the Leachate Treatment Facility (two Frac tanks); and with the combined clean-closure certification and approval of protective filing status, NYSERDA has no further closure actions to complete. NYSERDA is currently awaiting an amendment of the operational status of this unit to "no further action."

1.2 Trench Water Infiltration Controls

In September 1992, NYSERDA installed a soil-bentonite subsurface barrier wall along the western side of Trench 14 to divert groundwater flow away from the south trenches (eight through 14). In June 1993, the project was completed with the installation of an exposed, very low-density polyethylene (VLDPE) geomembrane cover extending from the centerline of Trench 12; across Trenches 13 and 14, and the barrier wall; and terminating in a stormwater drainage swale excavated just beyond the barrier wall. Between trenches, perforated piping was placed on top of the geomembrane in the drainage swale and backfilled with sand. Slit-trench monitoring wells were also installed on either side of the barrier wall to

monitor for possible groundwater mounding upgradient of the wall. This project was conducted as an interim measure (IM) under the Resource Conservation and Recovery Act (RCRA) 3008(h) Administrative Order on Consent (Docket No. II RCRA-3008(h)92-0202) (Consent Order). The Consent Order authorized the U.S. Environmental Protection Agency (EPA) and NYSDEC to issue orders requiring corrective action or such other responses as necessary to protect human health or the environment.

In 1995, NYSERDA expanded the use of geomembrane covers at the SDA with the installation of an exposed, reinforced, ethylene interpolymer alloy geomembrane (XR-5) cover over Trenches 1 through 8, and 10 through 12. As part of this project, NYSERDA installed a stormwater management system consisting of five, geomembrane-lined stormwater basins to detain and release precipitation without increasing peak runoff from preproject conditions. This project was also conducted as an IM under the Consent Order.

In the fall of 1999, NYSERDA installed an XR-5 geomembrane cover on Trench 9, replacing a bioengineering management cover that was installed as a pilot project in September 1993. Nondestructive testing of the VLDPE geomembrane material in 2008 confirmed the cover was nearing the end of its useful life. In 2010, NYSERDA installed a new XR-5 geomembrane cover over the existing VLDPE to ensure continuation of effective water infiltration controls in this area of the SDA.

1.3 Corrective Measures Study (CMS)

The SDA trenches are known to contain materials that are classified as hazardous constituents under RCRA. Because there is a possibility that these materials could be released from the trenches, NYSERDA is obligated to prepare a CMS under the requirements of the Consent Order. On October 6, 2010, NYSERDA submitted the *Final Focused Corrective Measures Study for the State-Licensed Disposal Area at the Western New York Nuclear Service Center West Valley, New York.*[a] NYSERDA is required to prepare a Final CMS under the requirements of the Consent Order at the time a decision is made on the final disposition of the SDA.

[a] Ecology and Environment, Inc. for NYSERDA, October 4, 2010, Final Focused Corrective Measures Study for the State-Licensed Disposal Area at the Western New York Nuclear Service Center West Valley, New York.

1.4 Hazardous Waste Management Permit Application

In 2010, NYSDEC requested that NYSERDA move from an interim status permit to a final status permit. In response, on January 6, 2011, NYSERDA submitted a draft 6 NYCRR Part 373 Hazardous Waste Management Permit Application (i.e., Corrective Action Permit Application). On February 10, 2011, NYSDEC requested that the timeframe for review and processing of NYSERDA's Hazardous Waste Management Permit be suspended per 6 NYCRR Part 621 of the Uniform Procedures Act. NYSERDA agreed to suspend the timeframes for this application on February 23, 2011. NYSERDA met with NYSDEC on July 18, 2012, to discuss the regulatory path forward, and on October 23, 2012, NYSDEC informed NYSERDA that a new regulatory document (i.e., Corrective Action Only Order) for the WNYNSC would be developed when information from the Phase 1 Studies is available to better inform additional corrective action activities.

2 Environmental Monitoring

2.1 Trench Leachate Elevations

2.1.1 Leachate Elevation Monitoring

One SDA trench sump is located in Trenches 1 through 5, 8 and 9, and 11 through 14. Two sumps, designated 10N and 10S, are located in Trench 10 (see Figure 2-1).

Leachate elevations are measured in the 13 trench sumps at the SDA in accordance with the *Leachate Monitoring Plan for the State-Licensed Disposal Area (SDA) at West Valley* (LMP). In addition to requiring the leachate elevation measurements, the LMP specifies data assessment, notification and reporting requirements. Table A-1 presents leachate elevation data for 2015. Graphical presentations of leachate elevations over the time period (2005-2015) are presented using regression lines (red) and prediction intervals (green) in Figures A-1 through A-14. Note that Figures A-13 and A-14 present data starting from 1997 to demonstrate the long-term changes in leachate elevation trends at Trench 14. This method will aid in the identification of other leachate elevation changes in the trenches.

A regression analysis is a statistical process for estimating the relationship among dependent and independent "predictor" variables. It takes into account how the typical value of the dependent variable changes when any one of the independent variables change while other independent variables remain fixed. In this manner, the regression analysis can estimate a conditional expectation of the dependent variable (in this cause, the leachate levels). The 95 percent prediction intervals presented on the graphs are an estimate of the interval in which future observations will fall, with a 95 percent probability, given what has already been observed at that particular location.

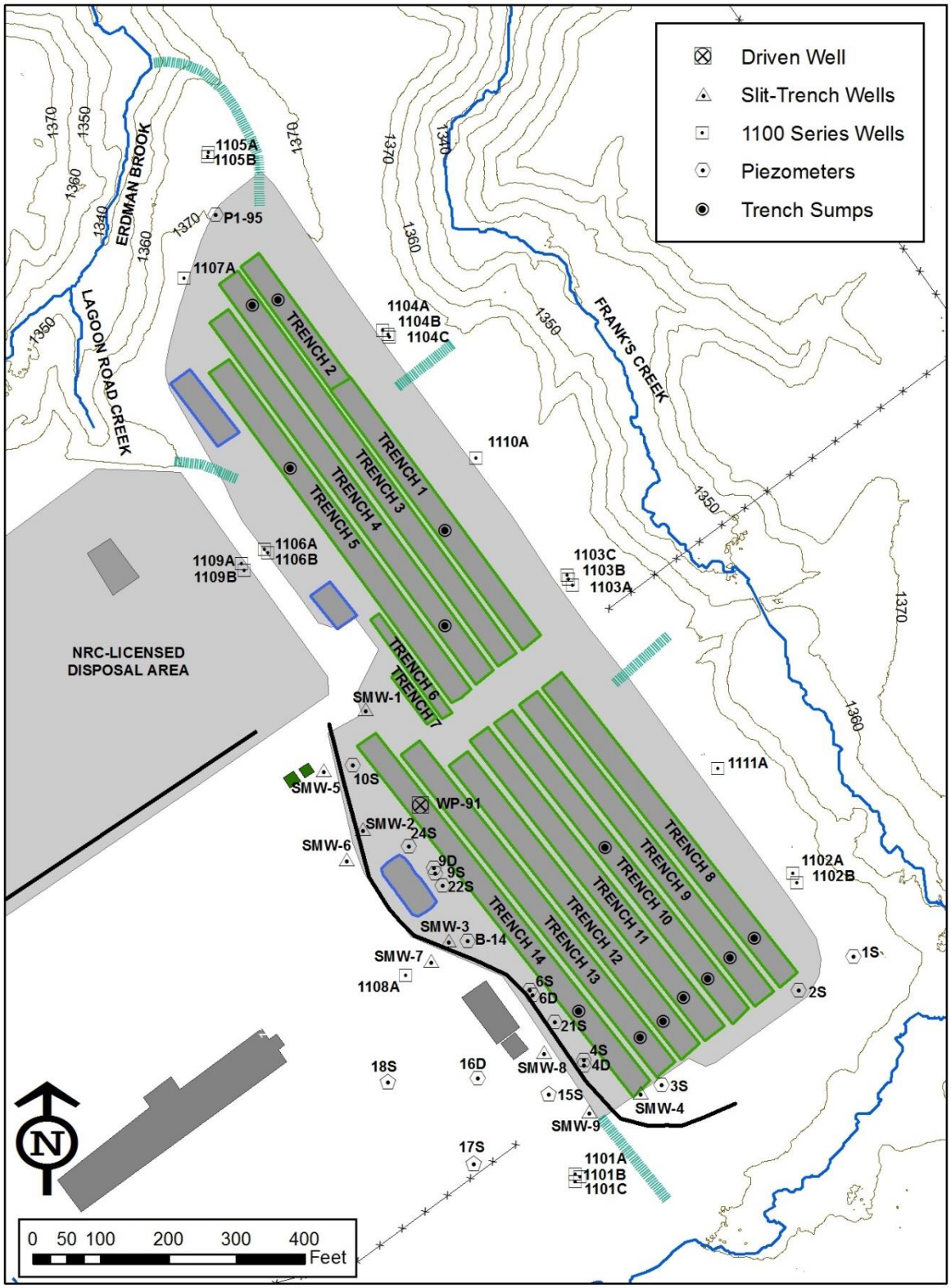
Leachate elevation measurements for 2015 were collected quarterly in March, May, September, and November (see Table A-1). Monthly leachate elevation measurements were taken in Trenches 13 and 14 (see discussion below).

2.1.2 Leachate Elevation Trend Assessment

The LMP requires an annual assessment of long-term leachate elevation trends. The long-term statistical

Figure 2-1. Trench Sump and Groundwater Monitoring Locations

Source: NYSERDA



data assessment for 2015 (*Annual Statistical Assessment of SDA Water Elevations - Data Through 2015*[b]) indicates that from 2000 through 2015, most trenches show a decreasing long-term leachate elevation trend (Figure 2-2). Trench 1 shows an increasing long-term trend, though leachate elevations in Trench 1 have been at or near the bottom of the sump for several years. NYSERDA will continue to monitor and evaluate the leachate elevation in Trench 1.

As described below, an increase in the Trench 14 leachate elevation has been observed since 2011 following a period of consistent decrease (Figure 2-3); but due to the long-term decreasing trend for Trench 14, this increase is not identified using the Mann-Kendall with Sen's method test. As such, NYSERDA instituted the regression analysis as another tool to evaluate leachate elevation changes. Based on the regression analysis plotted in Figure 2-4 and Appendix A-14, Trench 14 is increasing at approximately 1.09 inches/year.

In addition to the increasing trends in Trenches 1 and 14, a potential trend change has been noted for Trench 3. This change in trend has not been identified using the Mann-Kendall with Sen's method test due to its shortness of duration. Therefore, short-term regression analyses were also run on Trench 3. At this time, the short-term analyses indicate that the predicted change in leachate elevation at Trench 3 is +0.22 inches per year (see Figure A-3[b]).

Due to the low levels in Trenches 1 and 3, and the fact that these increases are very small, the current leachate levels do not represent a threat to health and safety at the public or the environment. NYSERDA will continue to review and evaluate leachate trends in the trenches using the regression analyses to identify changes in trends that may not be identified using the historical long-term statistical analyses.

2.1.3 Trench 14 Leachate Elevation

Following the installation of infiltration controls in the mid-1990s, the Trench 14 leachate elevation followed a consistent and generally predictable decreasing trend (Figure 2-3). A noteworthy change in behavior of this trend occurred in approximately 2008-2009 when the decreasing trend stopped, as shown in Figure 2-3.

[b] AECOM, March 2016, Annual Statistical Assessment of SDA Water Elevations – Data Through 2015.

Figure 2-2. SDA Water Elevation Trends

Source: NYSERDA

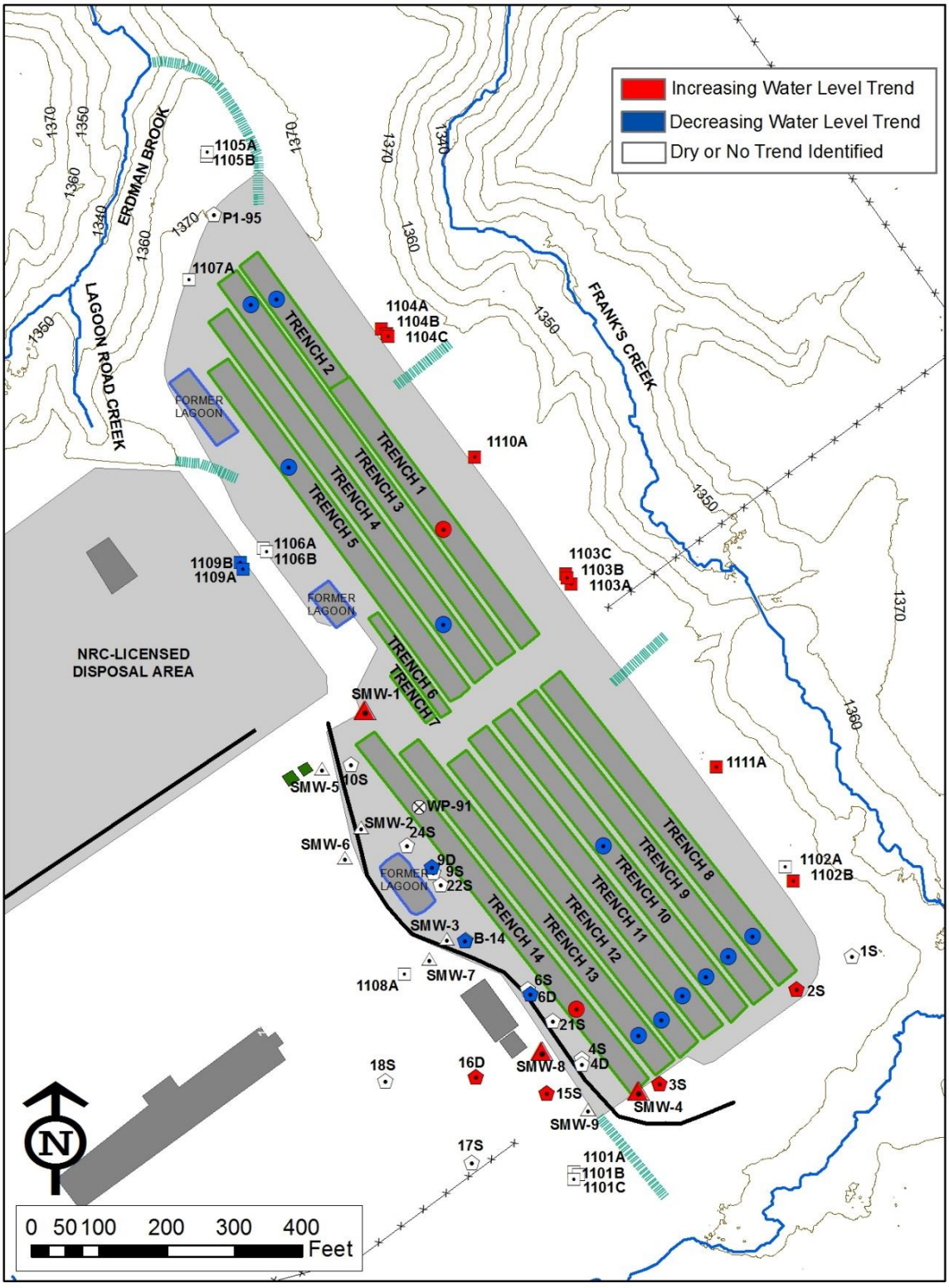


Figure 2-3. Trench 14 Leachate (Water) Elevations for the Period 1997 to 2015, Inclusive

Regression line (red) for data for the period January 1997 to May 2008. R2 = 0.97. 95% Prediction intervals shown in green. Predicted change in leachate elevation from this regression line was -1.32 inches per year.

Source: NYSERDA

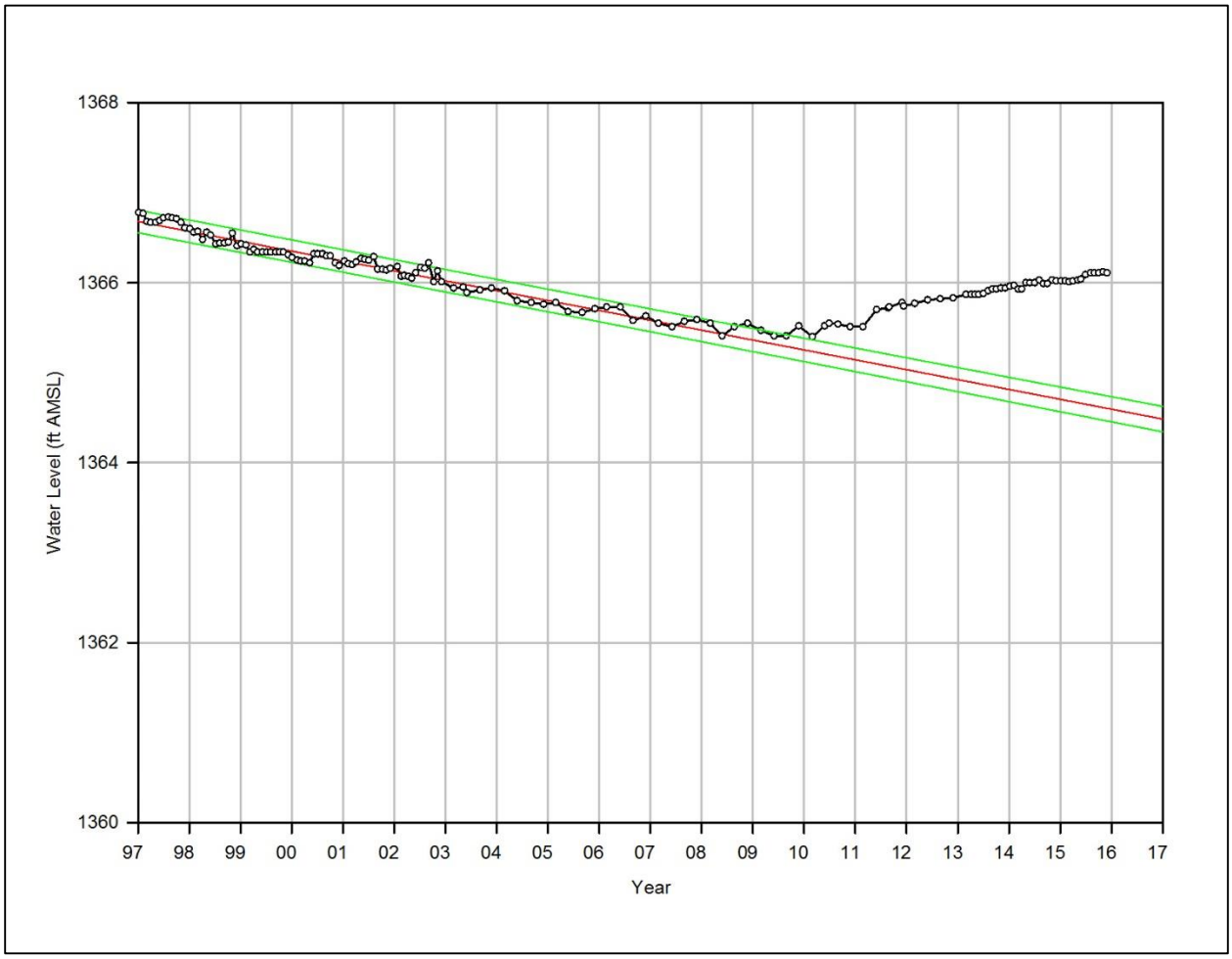
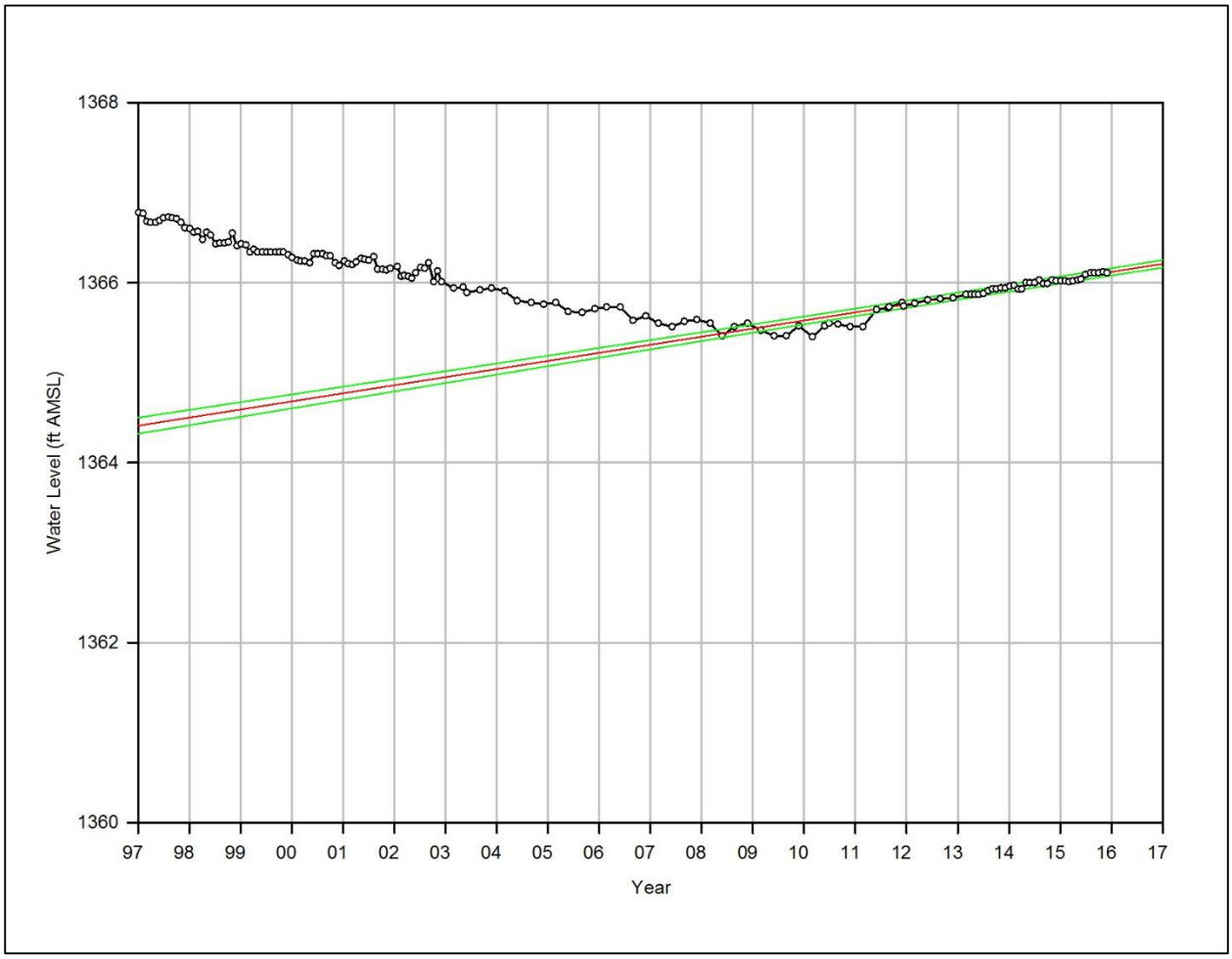


Figure 2-4. Trench 14 Leachate (Water) Elevations for the Period 2011 to 2015, Inclusive.

Regression line (red) for data for the period June 2011 to December 2015. R2 = 0.97. 95% Prediction intervals shown in green. Predicted change in leachate elevation from this regression line is +1.09 inches per year.

Source: NYSERDA



Small increases and decreases have been observed since 2011, but overall, the Trench 14 leachate elevation has continued to increase each year. Although none of the increases were large enough to trigger regulatory reporting requirements, the 2015 data set shows that the small increases have been continuing, and have been consistent and predictable since mid-2011 (Figure 2-4). It should be noted however that the data set from the second half of 2015 (July through December) shows that the leachate elevation during that time remained relatively stable at 1366.11 to 1366.12 ft above mean sea level (AMSL). During 2015, the leachate in Trench 14 increased by 0.10 ft (1.2 inches). None of the nearby trenches are showing a similar increase.

The highest leachate elevation observed in Trench 14 was in 1992 (1367.46 ft AMSL), when it was 1.35 ft higher than it is today. Even at this higher elevation, there was no release of leachate from the trench. As such, this current leachate elevation increase in Trench 14 does not present a threat to public health and safety, or the environment; however, NYSERDA is investigating the increase.

In 2014, NYSERDA issued a contract with an independent consulting company to conduct a detailed evaluation of the leachate increases in Trenches 14 and 1 (to address a very slow increase in the leachate elevation that has been observed for several years within Trench 1). The purpose of this evaluation was to identify a cause or potential cause for the increase in the leachate elevation that has been observed for several years within both trenches, and to present findings and recommendations for mitigating the increases. This evaluation has included extensive geologic and hydrologic data evaluation, resulting in a preliminary Findings and Recommendations Report, which was submitted to NYSDEC in 2015. Currently, a work plan is being finalized to address the findings and recommendations presented in the 2015 report. The field activities associated with this work plan will be conducted in the spring of 2016, with a final Findings and Recommendations Report anticipated to be completed in the fall of 2016.

2.2 Groundwater Monitoring

The SDA groundwater monitoring network consists of 21 groundwater monitoring wells (the 1100-series wells), 19 piezometers and nine slit-trench wells. The location of each monitoring well is shown in Figure 2-1. The purpose of the groundwater monitoring program is twofold: (1) to provide data of sufficient quality and quantity to allow detection of the migration of radionuclides or volatile organic compounds (VOCs) from the SDA via groundwater; and, (2) to provide information on hydrologic conditions near the disposal trenches. The Groundwater Monitoring Program is conducted in accordance with the *Groundwater Monitoring Plan for the State-Licensed Disposal Area (SDA) at West Valley* (GMP). The

1100-series wells, piezometers, and slit-trench wells are inspected and maintained as described in the GMP.

2.2.1 Groundwater Elevation Monitoring

The GMP requires quarterly groundwater elevation measurements in the 1100-series wells, the piezometers and the slit-trench wells. In 2015, measurements were taken in March, May, September, and November; and the results for each well are presented in Tables B-2, B-4 and B-6, respectively. In addition, monthly groundwater elevation measurements were taken at a number of locations in support of the Trench 14 leachate investigation (see Section 2.1.3).

Groundwater elevation data are used to construct quarterly groundwater elevation contour maps for the weathered Lavery till and the Kent recessional sequence (see Figures B-1 through B-8). The 2015 groundwater contour maps show the hydraulic gradient in the weathered Lavery till, in the vicinity of the disposal trenches, to be inward toward the trenches. The path of the groundwater movement in the Kent recessional sequence is northeasterly. These trends are consistent with historical data.

2.2.2 Groundwater Elevation Trend Assessment

An assessment of upward or downward trends in groundwater elevations was conducted for the data collected in 2015 (*Annual Statistical Assessment of SDA Water Elevations – Data through 2015*[c]). The statistical assessment used groundwater elevation data from January 2000 through December 2015, and the results of the trend assessment show an increasing water elevation trend in: Wells 1102B, 1103A, 1103B, 1103C, 1104A, 1104B, 1104C, 1110A, and 1111A; Piezometers 2S, 3S, 15S, and 16D; and Slit-Trench Wells SMW-1, SMW-4 and SMW-8. A decreasing water elevation trend was observed in: Wells 1109A, Well 1109B and Piezometers 6D, 9D and B-14. Piezometers 4S and 9S, and Slit-Trench Wells SMW-2 and SMW-3 have been dry throughout the statistical assessment period. No upward or downward trends were found in the remaining groundwater wells at the SDA.

As Figure 2-2 shows, the majority of the wells located within the area covered by the geomembrane and immediately downgradient of the slurry wall are dry, or exhibit no trend. Several wells located on the

[c] Ibid.

upgradient side of the slurry wall show an increasing trend. This distribution of groundwater elevations near the west side of Trench 14, and the decreasing leachate elevation trends in all but two of the SDA trenches, reflect the continued effectiveness of the water infiltration controls system (i.e., subsurface barrier wall and geomembrane cover). The majority of the wells on the east side of the SDA show an increasing trend.

2.2.3 Groundwater Parameter Monitoring

In accordance with the GMP, the 1100-series wells were sampled semiannually (June and December) during 2015. Analytical parameters monitored semiannually included gross alpha, gross beta, and tritium; and field water quality parameters (conductivity, pH, temperature, and turbidity). Analytical parameters monitored annually in 2015 included gamma-emitting radionuclides (by gamma spectroscopy); four beta-emitting radionuclides (carbon-14, iodine-129, strontium-90, and technetium-99); and VOCs. Checklists of the parameters sampled at each well are presented in Tables B-7 and B-8. Groundwater analytical results for all parameters, except VOCs, are presented in Tables B-9 and B-10.

2.2.3.1 Gross Alpha

The gross alpha sampling results from all wells did not exceed the reporting criteria set forth in the GMP. In June, none of the Upper Tolerance Limit (UTLs) or Upper Predictive Limits (UPLs) were exceeded for any of the sampled wells.

In December, the UTL for gross alpha was exceeded for Wells 1101A and 1103A. In the case of these exceedances, resampling was not conducted as the results are consistent with historical data and within the range of general environmental levels.

Gross alpha results were assessed using the statistical intrawell comparison protocol described in the GMP. Results of gross alpha monitoring are consistent with historical results.

2.2.3.2 Gross Beta

The gross beta sampling results from all wells did not exceed the reporting criteria set forth in the GMP. In June, none of the UTLs or UPLs were exceeded for any of the sampled wells.

In December, the UTL for gross beta was exceeded for Well 1108A. In the case of this exceedance, resampling was not conducted as the result is consistent with historical data and within the range of general environmental levels.

Gross beta results were assessed using the statistical intrawell comparison protocol described in the GMP. Results of gross beta monitoring are consistent with historical results.

2.2.3.3 Tritium

The tritium sampling results in all wells did not exceed the reporting criteria set forth in the GMP. In June, the UTL for tritium was exceeded for Wells 1102B and 1105B. In the case of these exceedances, resampling was not conducted as the results were below the secondary concentration limit (6E-07 µCi/mL) discussed in the GMP, consistent with historical data and within the range of general environmental levels.

Tritium results were assessed using the statistical intrawell comparison protocol described in the GMP. In December, none of the UTLs or UPLs were exceeded for any of the sampled wells.

2.2.3.4 Gamma-Emitting Radionuclides

The gamma-emitting radionuclide sampling results in all wells did not exceed the reporting criteria set forth in the GMP. Calculation of statistics (mean, standard deviation and control charting) for the 14 routinely reported gamma emitters was not required because five positive detections (as defined in the GMP) had not occurred for any gamma-emitting radionuclide.

2.2.3.5 Beta-Emitting Radionuclides

The results from all other beta-emitting radionuclides (carbon-14, iodine-129, strontium-90, and technetium-99) sampled did not exceed the reporting criteria set forth in the GMP, except for Well 1107A, which exceeded the Strontium-90 (Sr-90) value. Well 1107A is located in the area where the leachate overflowed the trenches in 1975. This exceedance may be a result of residual activity from the 1975 seepage event.

The Sr-90 result for Well 1107A (6.14E-09±8.30E-10 µCi/mL) exceeded the criteria in the GMP, but was similar to historical results. After the fifth value above the GMP for Sr-90 in the well (2002) was reported, control charting was initiated. The current calculated mean and control limits are based upon the initial

five positive detections. Based upon the control chart for Sr-90 in Well 1107A, no trends in the data have been identified.

2.2.3.6 Volatile Organic Compounds

VOC results for samples collected in 2015 did not exceed the reporting criteria set forth in the GMP and were generally consistent with historical results. Because the VOC results are all "non-detects," the VOC data tables are not included in this report.

2.2.3.7 Field Water Quality Parameters

Conductivity, temperature, turbidity, and pH are measured in the field during groundwater sampling. The 2015 water quality measurements were consistent with historical results and are reported in Table B-10.

2.3 Surface Water Monitoring

During 2015, quarterly surface water samples for gross alpha, gross beta, and tritium analyses were collected at the four SDA monitoring locations (WNNDADR, WNERB53, WNFRC67, and WNDCELD). A background sampling location south (and upgradient) of the SDA on Buttermilk Creek (WFBCBKG), also collected quarterly, is used for data comparison. An annual sample was also collected at WFBCANL in 2015, approximately 0.75 miles northeast (and downgradient) of the SDA on Buttermilk Creek.

As shown in Figure 2-5, WNNDADR, located in Lagoon Road Creek adjacent to both the SDA and the NDA within the WVDP premises, and WNERB53, located in Erdman Brook downstream of WNNDADR, monitor surface water runoff from the SDA and NDA, and portions of the WVDP Premises. WNDCELD, located in Frank's Creek on the south side of the SDA, monitors surface water from areas adjacent to the WVDP Drum Cell upstream of the SDA. WNFRC67, located farther downstream on Frank's Creek, monitors surface water on the eastern and southern portions of the SDA.

Figure 2-6, shows WFBCBKG, located upstream of the WNYNSC in Buttermilk Creek, monitors background surface water conditions, and WFBCANL, also located in Buttermilk Creek, monitors surface and seepage water on the eastern portions of the SDA.

Figure 2-5. Surface Water Monitoring Locations (WNNDADR, WNERB53, WNFRC67 and WNDCELD)

Source: NYSERDA

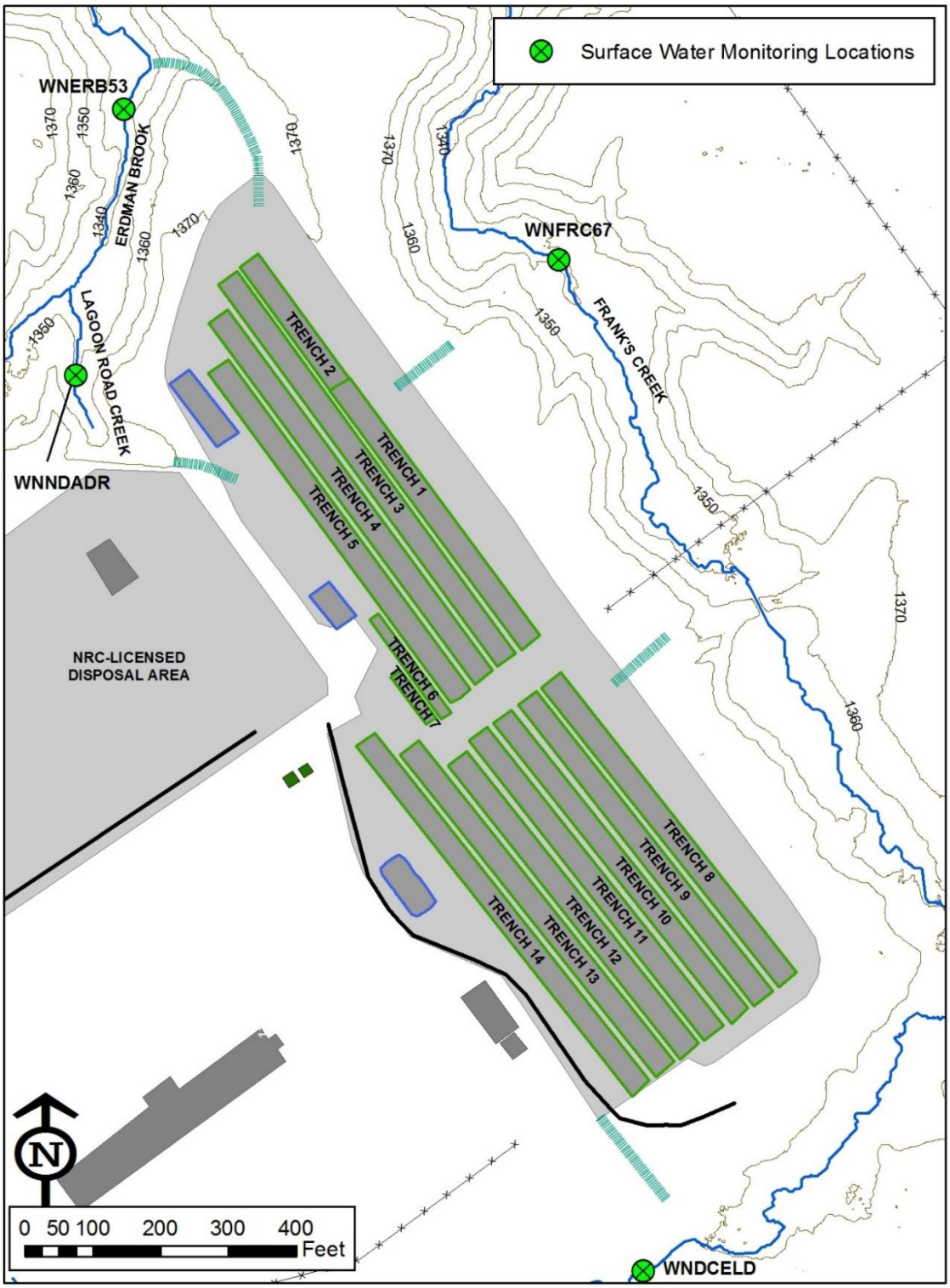
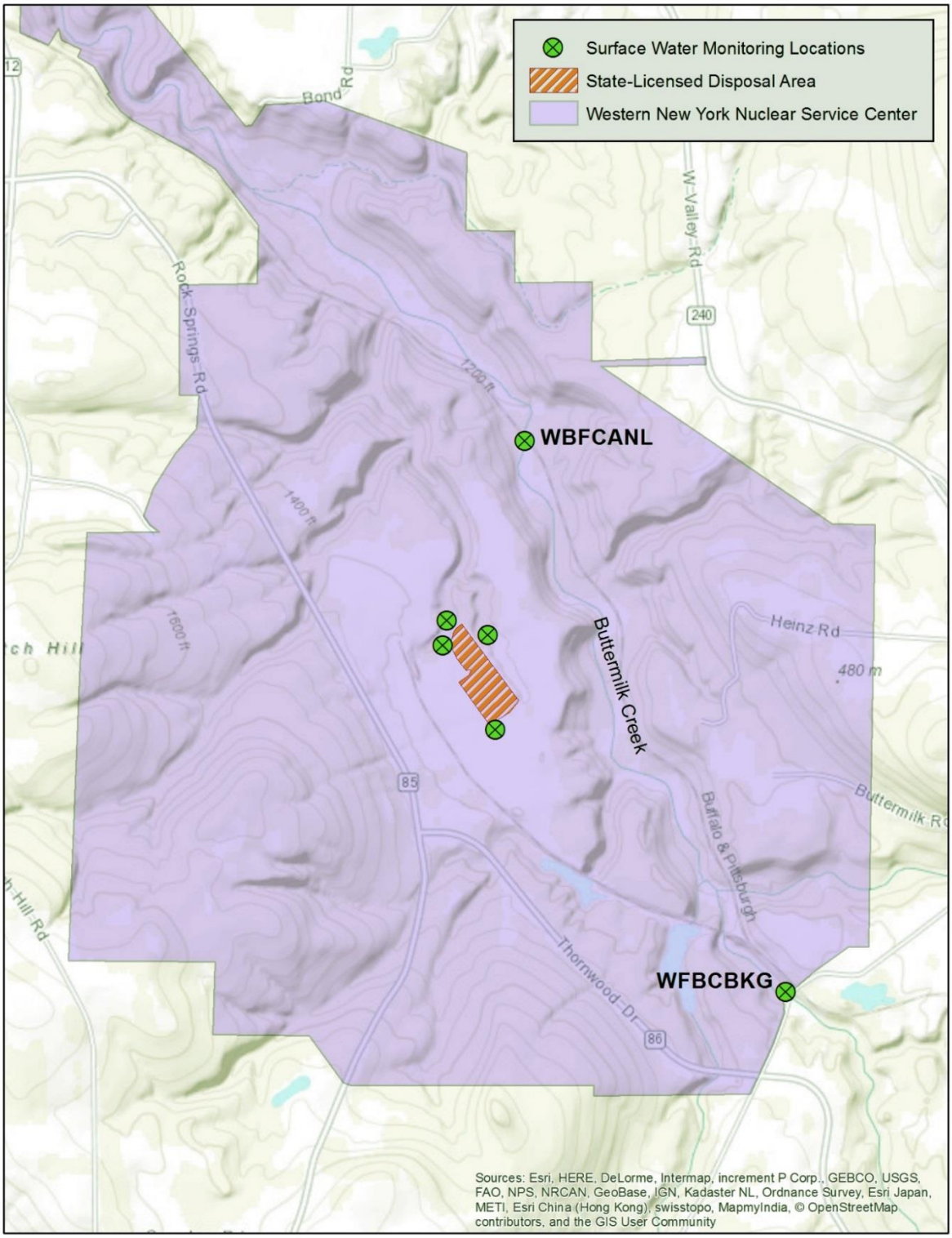


Figure 2-6. Surface Water Monitoring Locations (WFBCBKG and WFBCANL)

Source: NYSERDA



Surface water monitoring data are presented in Tables C-1 through C-6. A statistical assessment of radiological constituents (gross alpha, gross beta and tritium) for the SDA surface water was conducted using the data collected in 2015 (*Statistical Assessment of SDA Surface Water Constituents for 2015*[d]).

2.3.1 Radiological Parameters

2.3.1.1 Gross Alpha

The 2015 gross alpha results at all four SDA surface water sampling locations (WNDCELD, WNNDADR, WNFRC67, and WNERB53) were statistically indistinguishable from background. These findings are consistent with previous annual statistical assessments. All results were below the 6 NYCRR 703.5 - Table 1 Water Quality Standards for Surface Waters and Groundwater (1.5E-08 µCi/mL), which is used as a comparative value for gross alpha.

2.3.1.2 Gross Beta

The 2015 gross beta results from WNNDADR were statistically higher than the background location, which is consistent with historical results, although levels at WNNDADR have fallen by a factor of three since the NDA geomembrane cover and subsurface barrier wall were installed in 2008. Gross beta results for WNERB53 were also statistically higher than background in 2015, although quarterly reports have shown a statistically decreasing trend since May 2010. The 2015 gross beta results at WNFRC67 and WNDCELD were statistically indistinguishable from results observed at the WFBCBKG background location. These findings are consistent with previous annual statistical assessments. All gross beta results were below the 6 NYCRR 703.5 - Table 1 Water Quality Standards for Surface Waters and Groundwater (1.0E-06 µCi/mL), which is used as a comparative value for gross beta.

2.3.1.3 Tritium

The tritium result for WNNDADR was statistically higher than background in 2015, which is consistent with historical results, although levels at WNNDADR have fallen since the NDA geomembrane cover and subsurface barrier wall were installed in 2008. Tritium results for WNFRC67 were also statistically higher than background in 2015, but the data are consistent with historical results. The remaining two locations were statistically indistinguishable from background, which is consistent with previous annual

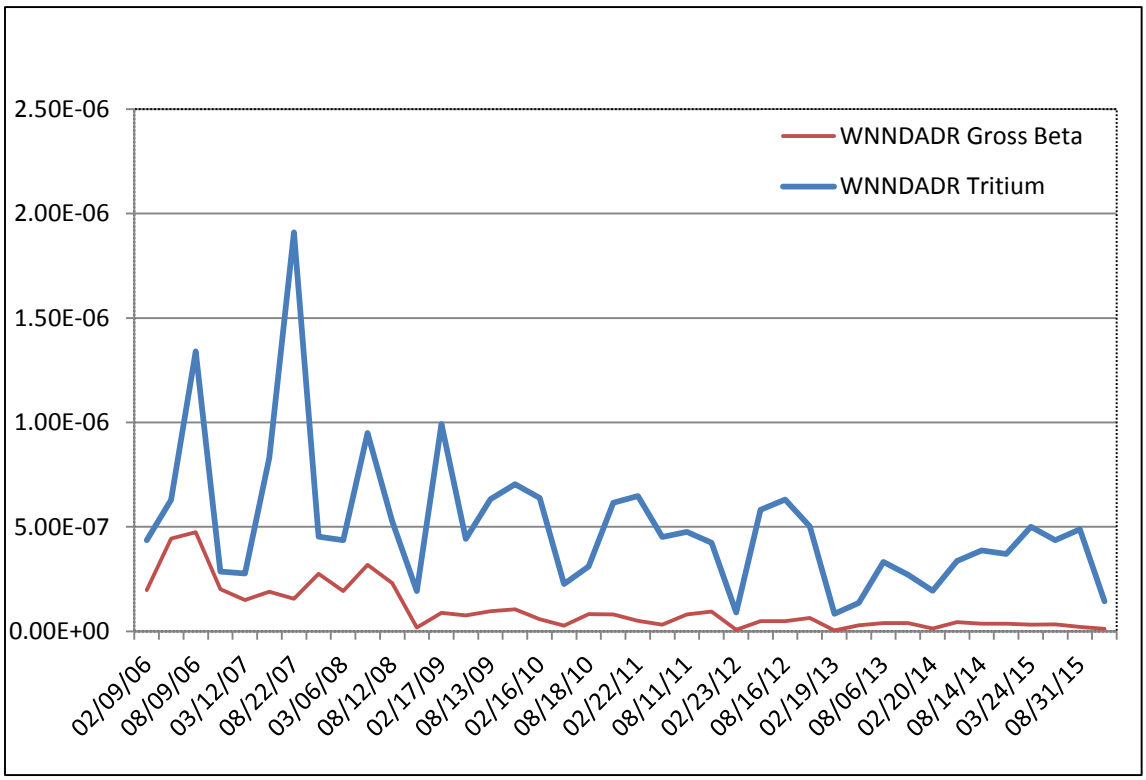
[d] AECOM, Statistical Assessment of SDA Surface Water Constituents for 2015, February 2016.

assessments. All tritium results were below the 6 NYCRR 703.5 Table 1 Water Quality Standards for Surface Waters and Groundwater (2.0E-05 µCi/mL), which is used as a comparative value for tritium.

Figure 2-7 shows the statistical decreasing trend for gross beta and tritium identified since 2008 for the WNNDADR location.

Figure 2-7. 2006 to 2015 Gross Beta and Tritium Concentration for WNNDADR (µCi/mL)

Source: NYSERDA

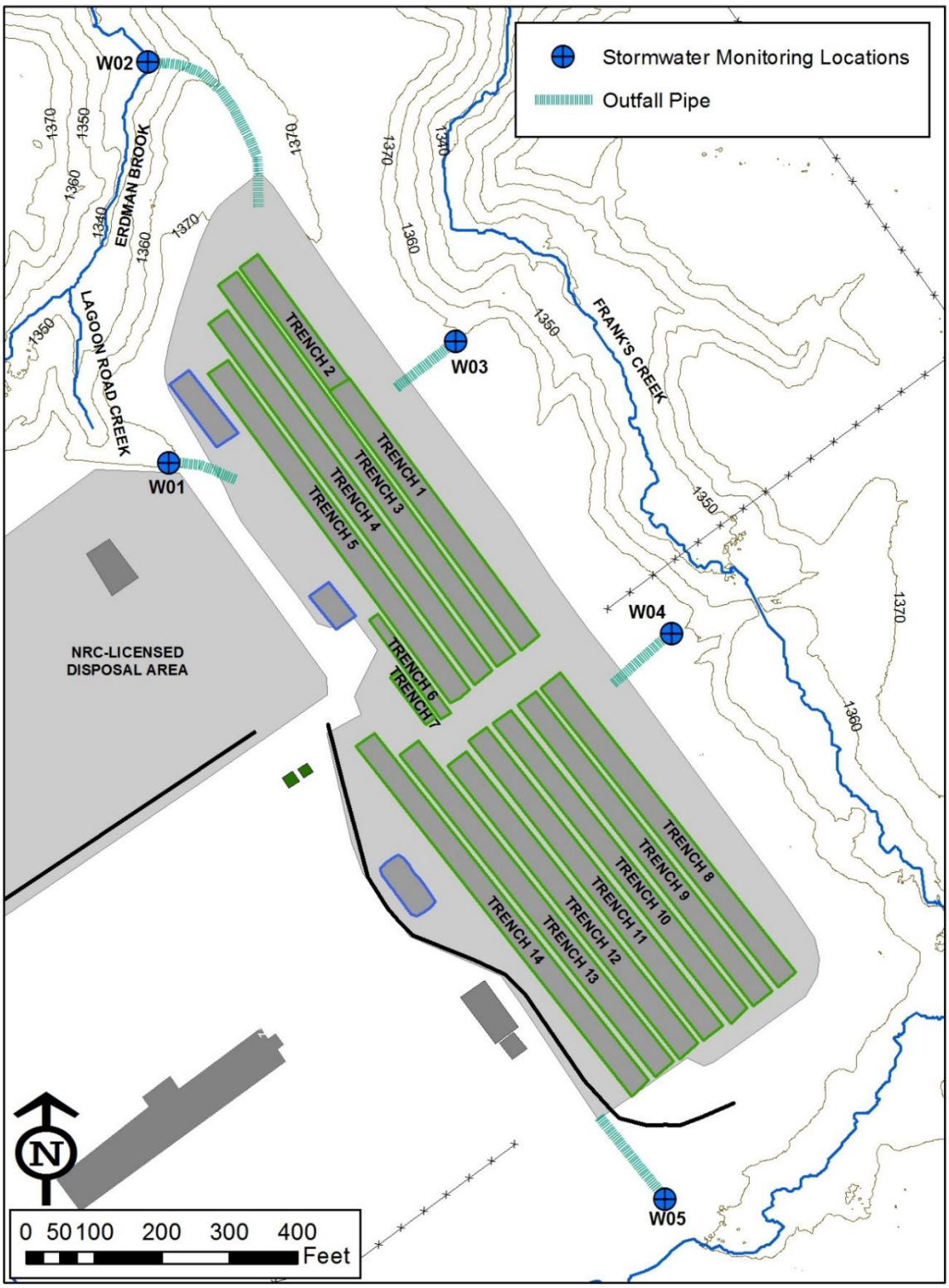


2.4 Stormwater Monitoring

As required by the SDA State Pollution Discharge Elimination System (SPDES) Permit No. NY-026971, semiannual sampling is conducted at one of the five designated SDA stormwater outfalls (as shown in Figure 2-8). During 2015, semiannual stormwater samples were collected from Outfall W01 during a nonqualified storm event on June 5 and a qualifying storm event on August 20. The total rainfall for the June 5 rain event was 0.02 inches, which was below the 0.1 inch permit requirement, therefore making it a "nonqualifying" event. However, the storm sampling event was accepted because the majority of the permit requirements were met.

Figure 2-8. Stormwater Monitoring Locations

Source: NYSERDA



Composite samples from both events were analyzed for biological oxygen demand (BOD), chemical oxygen demand (COD), total nitrate-nitrite and total Kjeldahl nitrogen (TKN), total phosphorus, total suspended solids (TSS), gross alpha, gross beta, tritium, and gamma spectroscopy. Grab samples from both events were analyzed for BOD, COD, total nitrate-nitrite and TKN, oil and grease, total phosphorus, TSS, pH, and temperature. Ambient rainfall samples from both events were analyzed for pH and temperature. Stormwater monitoring data for 2015 are reported in Tables C-7 and C-8.

2.4.1 Radiological Parameters

2.4.1.1 Gross Alpha

Gross alpha results from both semiannual sampling events were below the minimum detectable concentration (MDC). Statistical trend analysis for gross alpha results did not identify any significant trends. All results were below the 6 NYCRR 703.5 - Table 1 Water Quality Standards for Surface Waters and Groundwater (1.5E-08 µCi/mL), which is used as a comparative value for gross alpha.

2.4.1.2 Gross Beta

The gross beta result for the June 2015 sampling event (1.12E-08 µCi/mL) was above the reported MDC (1.95E-09 µCi/mL). The gross beta result for the August 2015 storm event (6.59E-10 µCi/mL) was below the reported MDC (1.92E-09 µCi/mL). Statistical trend analyses for gross beta results did not identify any significant trends for either event. All gross beta results were below the 6 NYCRR 703.5 – Table 1 Water Quality Standards for Surface Waters and Groundwater (1.0E-06 µCi/mL), which is used as a comparative value for gross beta.

2.4.1.3 Tritium

Detectable tritium concentrations were measured in samples from both semiannual sampling events. The June and August 2015 results (8.53E-07 µCi/mL and 2.09E-07 µCi/mL, respectively) exceeded the MDC for each sampling period (5.99E-08 µCi/mL and 8.66E-08 µCi/mL, respectively). Statistical trend analyses for tritium results from both sampling events did not identify any significant trends. All tritium results were below the 6 NYCRR 703.5 Table 1 Water Quality Standards for Surface Waters and Groundwater (2.0E-05 µCi/mL), which is used as a comparative value for tritium.

2.4.1.4 Gamma Spectroscopy

The results for three gamma emitters (Cesium-137 [Cs-137], Cobalt-60 [Co-60] and Potassium-40 [K-40]) are reported for each stormwater sampling event. In addition, gamma spectroscopy results were reviewed for an additional 145 gamma-emitting radionuclides. During 2015, Cs-137, Co-60, and K-40 results were not above their respective MDC.

Beryllium (Be-7) was reported in the June 2015 composite sample results above the MDC and 2-sigma uncertainty. Be-7 has been reported five other times since 2008 at generally similar concentrations.

Beryllium-7, which has a half-life of 53 days, is a cosmogenic radionuclide and is removed from the atmosphere via precipitation. Its presence in a stormwater sample is not unexpected.

2.4.2 Chemical and Physical Parameters

Results for all chemical and physical parameters were below the SPDES permit limits. As required by the SPDES permit, chemical and physical results were reported to NYSDEC's Division of Water in the Discharge Monitoring Report after each semiannual sampling event.

2.5 Gamma Radiation Monitoring

2.5.1 Overland Gamma Radiation Surveys

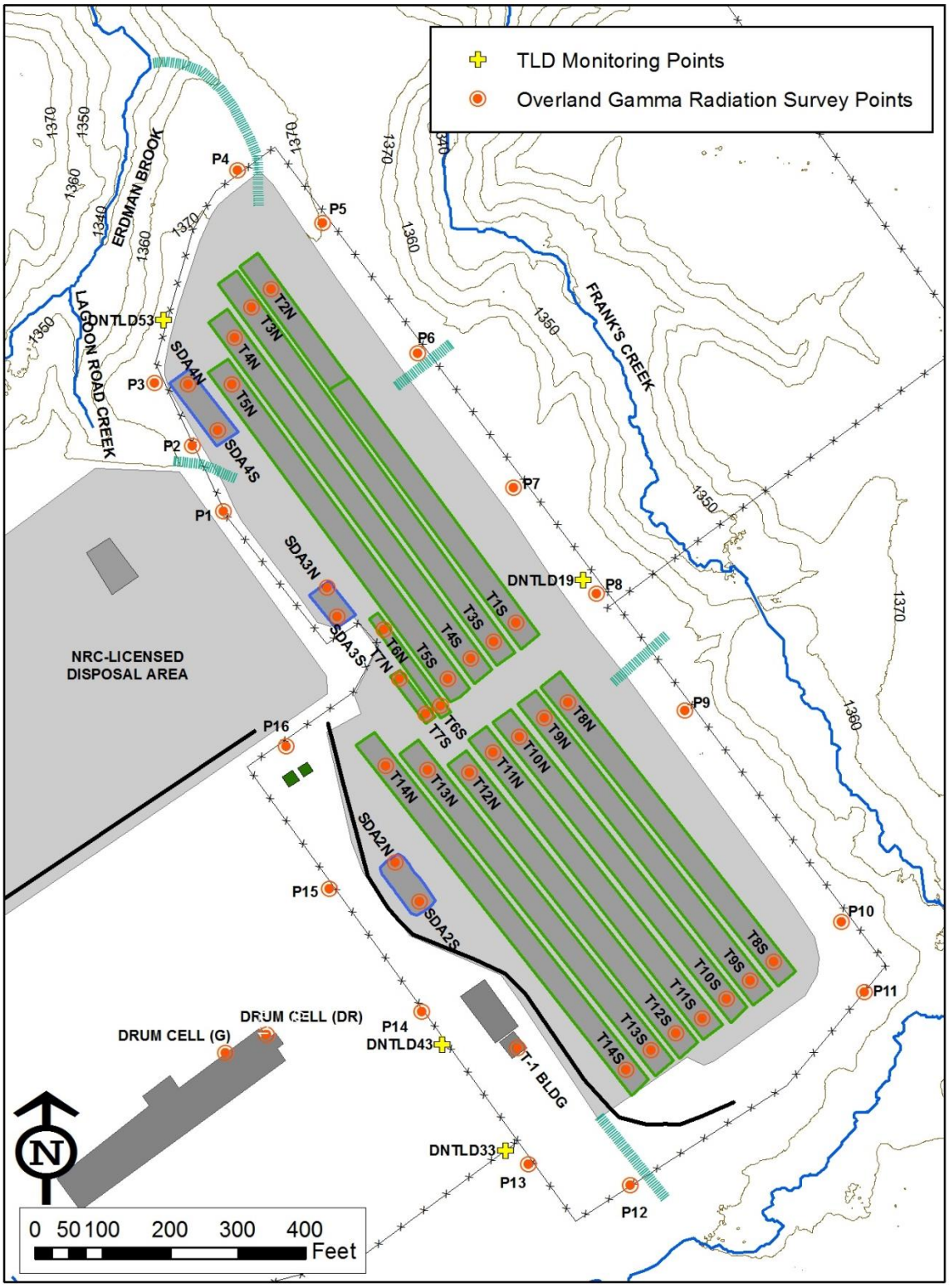
Gamma radiation surveys are performed semiannually at the SDA to maintain current data on gamma exposure levels and to monitor for changing conditions at the SDA.

As shown on Figure 2-9, radiation levels are measured at 51 fixed-survey locations in and around the SDA including:

- 32 monument markers located on the north and south ends of each trench (designated as T1s, T1n, etc.), and the three filled lagoons (SDA2, SDA3 and SDA4) to monitor the contribution of underground radioactive materials to the area radiation levels within the SDA.
- 16 SDA perimeter survey points (P-1 through P-16) marked on the chain-link fence surrounding the SDA to monitor external radiation from all sources, including the WVDP.
- One survey point (T-1) inside the T-1 Building. This location was previously used to track radiation levels from the stored Trench 14 leachate. Because the leachate was removed from the tank in 2009 and the Tank was removed in 2010, this measurement is taken in the middle of the now-vacant concrete tank pad.

Figure 2-9. Gamma Radiation Monitoring Locations

Source: NYSERDA



- Two survey points (DC-[G] and DC-dr) at the WVDP Drum Cell, located west of the SDA, to provide the information on the radiation levels near the Drum Cell. Historically, waste in the Drum Cell created elevated radiation levels at nearby SDA monitoring points. Radiation levels have fallen since the waste was removed from the Drum Cell in 2007.

At each fixed survey point, radiation levels are measured at one meter and one centimeter above the ground, floor or building surface.

Radiation detection instruments are also monitored continuously between fixed-survey locations to identify any anomalous reading(s) exceeding three times those of the nearby fixed-survey monitoring points; any such fluctuations are noted on the survey report form. Survey readings for the 2015 semiannual surveys (April and September) are provided in Table D-1.

Gamma radiation levels observed during the April semiannual survey were consistent with historical data. The September semiannual survey results were slightly elevated above the April data for all locations and the third quarter 2015 environmental thermoluminescent data verified these results. NYSERDA's new Radiation Safety contractor began work during the September period. NYSERDA will evaluate the contractor's measurement process to determine if there is a difference in reporting these results during the coming year.

2.5.2 Thermoluminescent Dosimetry Monitoring

Each calendar quarter, four environmental thermoluminescent dosimeters (TLDs) placed around the SDA are processed to obtain the integrated gamma radiation exposure from each location (see Figure 2-9). TLD monitoring locations DNTLD43 and DNTLD33 are located north and south of the SDA Tank buildings, respectively, on the western SDA perimeter fence. DNTLD19 is located midway along the SDA east perimeter fence and is farthest from WVDP radiation sources. DNTLD53 monitors the northwest corner of the SDA and is the closest to the WVDP and the NDA, which are potential sources of external radiation exposure. In addition to the on-site TLD locations, a background location, NYTLDBK, is located approximately 3.5 miles southwest of the SDA outside of the Ashford Office Complex. Environmental TLD monitoring results for 2015 are included in Table D-2.

The quarterly environmental TLD results for 2015 were reviewed for completeness and accuracy, and to determine whether if there were any outliers in the data set. Various outlier tests were performed for the 2015 results for each location, for which no outliers were confirmed; therefore, no results were removed from the 2015 data set.

The results of the statistical tests show that radiation exposures for DNTLD53 were higher than background and statistically higher than previous results. DNTLD53 is located in the northwest corner of the SDA, and monitors the SDA along with potential exposure from the NDA and WVDP activities. The statistical difference from historical assessments for DNTLD53 is due to slightly elevated results and decreased variability with the NYTLDBK background location. TLD exposures for DNTLD19, 33 and 43 were consistent with background and consistent with previous statistical assessments. No activities were performed at or near the SDA in 2015 that would have been expected to affect routine ambient radiation exposure.

2.5.3 Meteorological and Stream Flow Monitoring

NYSERDA operates and maintains a suite of meteorological instruments at the SDA, including instruments to measure total precipitation (e.g., rain, snow and sleet); temperature; relative humidity; barometric pressure; wind speed; and wind direction. The instruments are equipped with a battery-powered backup system to ensure data continuity during power outages. A quarterly summary of the daily precipitation at the SDA is provided in Tables E-1, E-2, E-3, and E-4. There were no interruptions in meteorological data collection in 2015.

NYSERDA operates and maintains a stage recorder on Buttermilk Creek at Thomas Corners Road Bridge (near the confluence with Cattaraugus Creek) to measure stream flow.

Data are logged at these stations every ten minutes and transmitted via cellular modem to NYSERDA's offices. NYSERDA maintains an interactive meteorological and stream flow database on the internet at: https://wqdatalive.com/public/334.

3 Erosion Monitoring

In accordance with the requirements of the Part 380 Permit #9-0422-00011/00011, NYSERDA has established a comprehensive erosion monitoring program at the SDA, inclusive of the surrounding slopes and streams. The objective of the program is to monitor active erosion processes that could threaten the integrity of the SDA. The monitoring ensures that erosion features are clearly identified, inspected, quantified, and, if necessary, mitigated before erosion damage can occur at the SDA.

3.1 Visual Inspections

3.1.1 General Visual Inspection of the SDA

The SDA and the surrounding land, slopes, gullies and streams are inspected for erosion at least five times per year under NYSERDA's *Walkover Inspection of the SDA* procedure. Wherever erosion is observed, WVSMP staff determine whether maintenance, mitigation and/or additional monitoring are necessary. Additional unscheduled inspections are conducted after predefined large precipitation events (>2.5 inches/24 hours) to check for significant erosion or mass wasting. Field observations are documented and follow-up actions, if necessary, are tracked using NYSERDA's maintenance log database.

NYSERDA conducted five regularly scheduled SDA walkover inspections in 2015.

3.1.2 Visual Inspections of Surrounding Stream Channels

In 2015, NYSERDA conducted visual inspections of the creeks that flow around three sides of the SDA (Erdman Brook, Frank's Creek and Lagoon Road Creek) monthly, as well as immediately following several large precipitation events. Stream channel inspections included the evaluation of installed erosion control structures.

A series of rainstorms occurred on July 14, 2015, resulting in a total of 3.9 inches of rainfall recorded at the SDA. While erosion controls on Erdman Brook and Frank's Creek functioned as designed (i.e., controlling grade within these streams near the SDA) some damage to the structures occurred during these rainstorms (i.e., displacement of rock armoring, and erosion of the streambed and streambanks). The damage and associated photographs were documented in the Erosion Monitoring Log. NYSERDA conducted repairs of these erosion controls, as detailed in Section 4.

3.1.3 Quantitative Measurements

Survey data for the North Slope and Trench Cap was collected on November 9, 2015, by Clear Creek Land Surveying, LLC. Survey data contained herein is being reported in North American Datum (NAD 27) for horizontal positioning, and the National Geodetic Vertical Datum (NGVD 29) for vertical positioning or elevation.

3.1.3.1 North Slope Survey

In accordance with the requirements of the Part 380 Permit #9-0422-00011/00011, NYSERDA conducts an annual elevation survey of the ground surface at established points on the North Slope of the SDA to detect slope movement. The survey and periodic field inspections of the North Slope area during 2015 confirmed no reportable horizontal or vertical movement (e.g., slumping).

The 2015 elevations of the North Slope monitoring points (see Figure 3-1) are provided in Table F-1. A comparison of the 2015 elevation data with the 2014 data did not show any reportable changes (>0.5 ft) in the elevations of the monitoring points. A few of the numeric location points are absent from Table F-1. This is due to the physical point markers being damaged and removed during erosion mitigation construction activities. Work is ongoing to re-stake the North Slope to install additional locations to improve our assessment of the North Slope's stability.

3.1.3.2 SDA Trench Cap Survey

NYSERDA also surveys the ground surface elevations along the SDA trench centerlines and monuments to monitor for trench cap settlement. NYSERDA has established fixed-trench cap elevation survey points that are easily surveyed from year to year. The annual results are compared to the previous year's data for indications of trench cap subsidence. A map identifying the location of the trench cap elevation survey points is shown in Figure 3-2.

All trench cap surveys begin at the centerline mark of the south monument plaque, and continue northerly at 100-ft stationing along the centerline of the trench until reaching the centerline mark of the north monument plaque. Results of the trench cap survey are provided in Table F-2. A comparison of the 2015 trench cap centerline elevations with 2014 elevation data did not indicate any significant elevation changes (>0.5 ft).

Figure 3-1. North Slope Ground Surface Elevation Survey Points

Source: NYSERDA

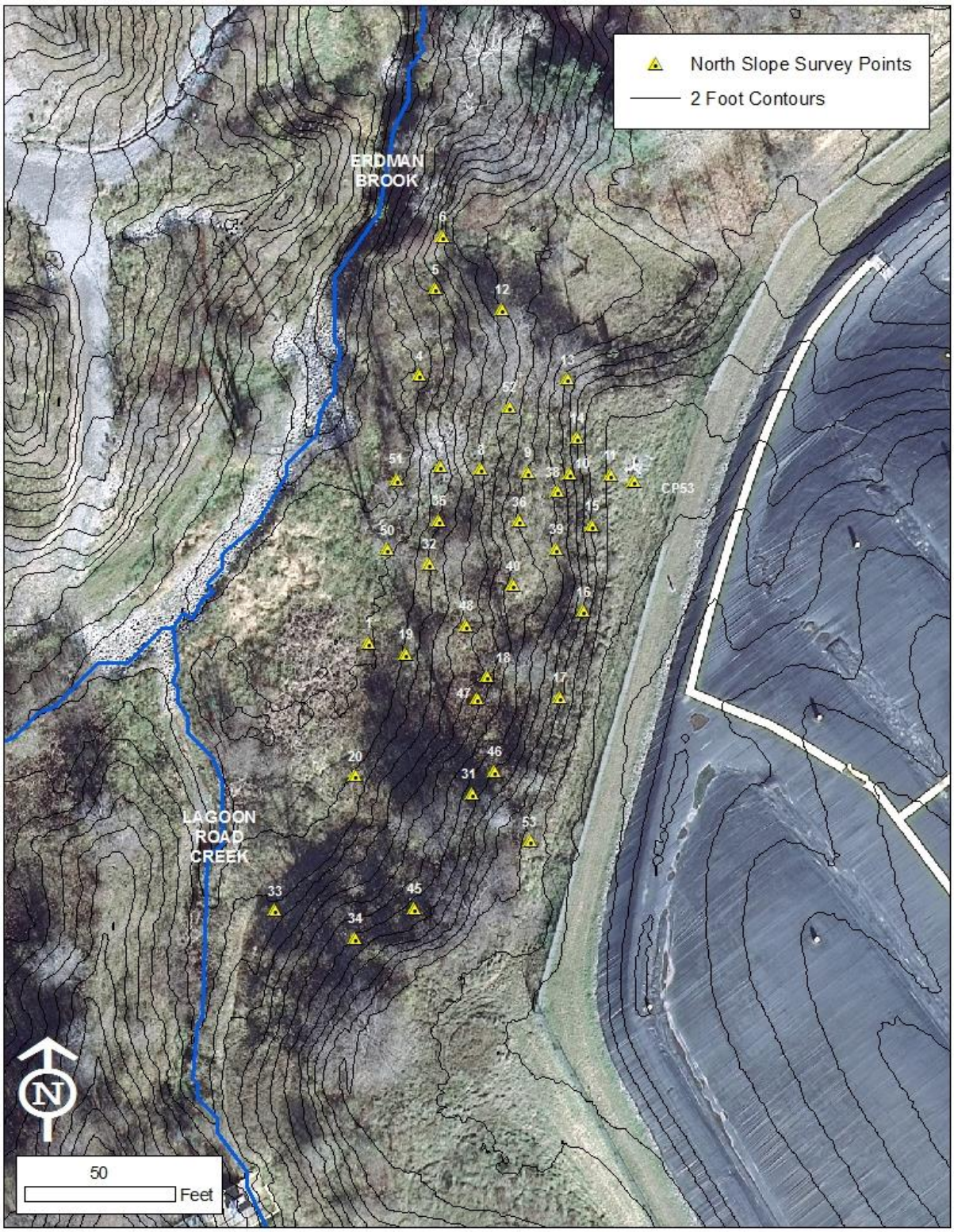
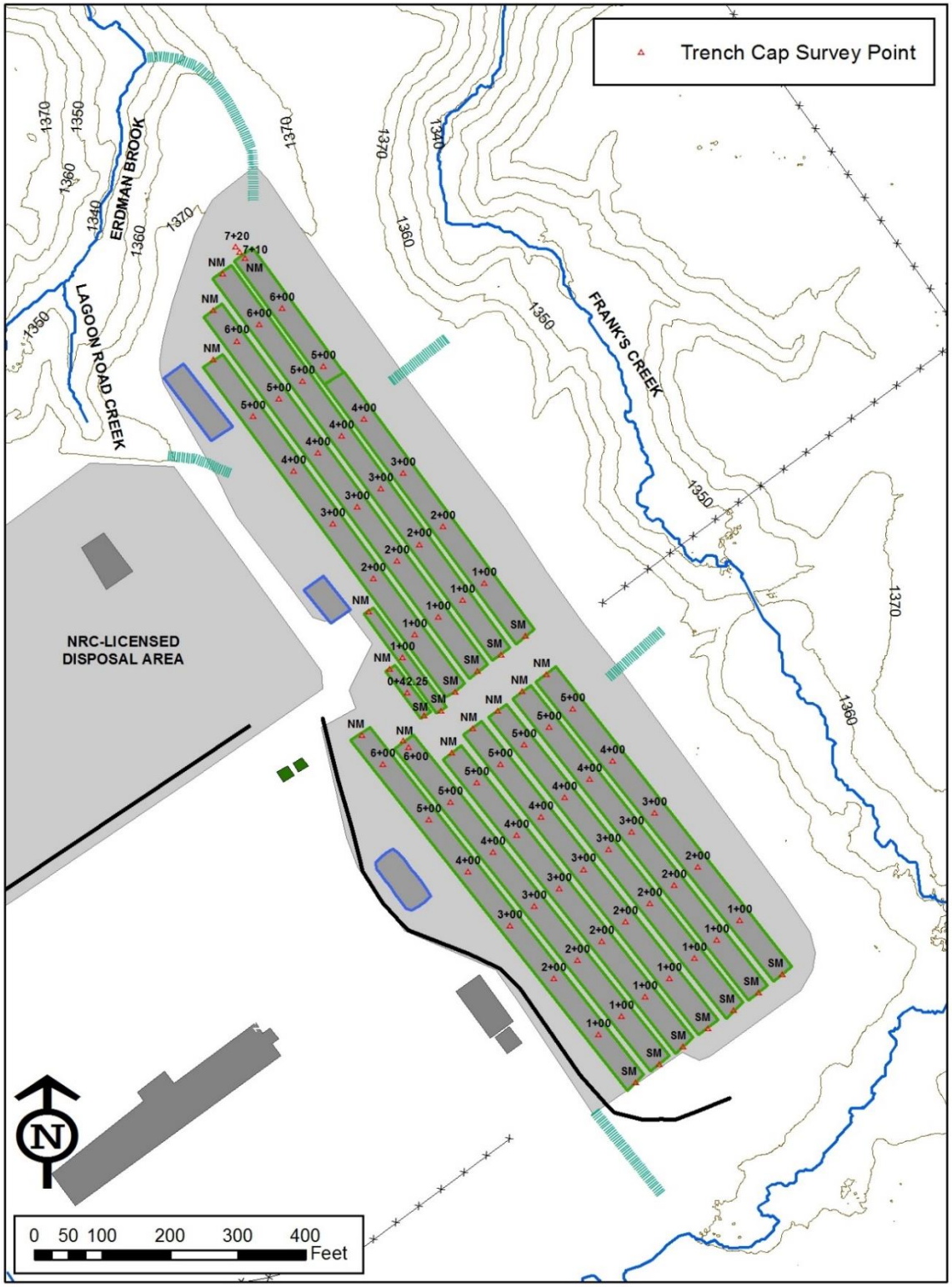


Figure 3-2. Trench Cap Ground Surface Elevation Survey Points

Source: NYSERDA



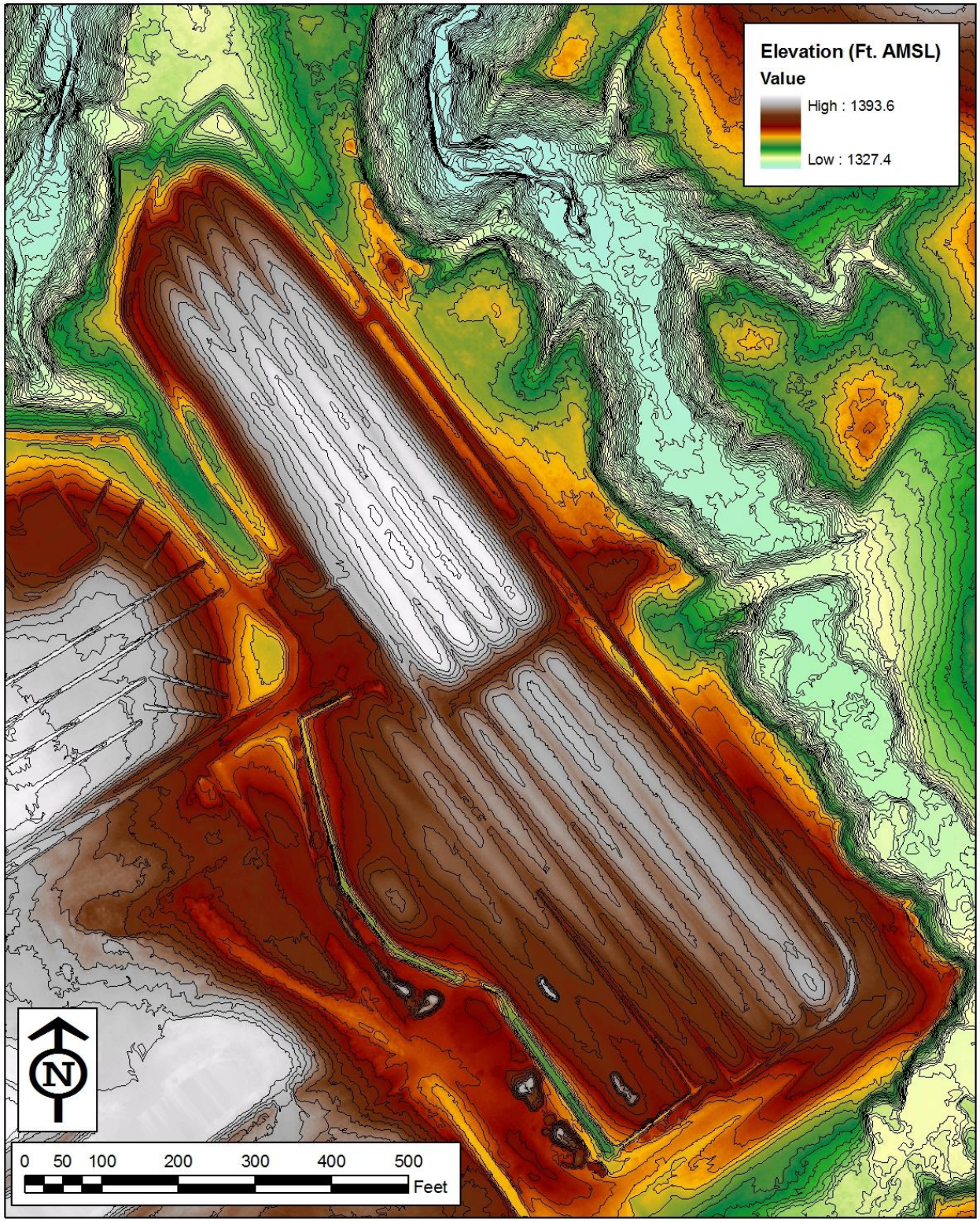
Areas of settlement were observed on the southern portions of Trench 8 and 13 in 2013. In 2014, NYSERDA conducted a focused topographic survey presented in a grid pattern of the first 100 ft of either trench to better quantify the subsidence that was occurring. NYSERDA will monitor these additional data points on an annual basis and report any significant results to NYSDEC.

3.1.4 LiDAR Mapping and Orthophotography

In 2010, NYSERDA conducted an aerial Light Detection and Ranging (LiDAR) mapping and orthoimagery project. A detailed topographic map of the Buttermilk Creek watershed was developed with a resolution (grid size) of 1.0 meter. For the WNYNSC and the SDA, a resolution of 0.5 meters was achieved. Figure 3-3 is a high quality topographic map of the SDA and the surrounding area that was derived from a subset of the 2010 LiDAR data. This project represents the most accurate and comprehensive large-scale topographic mapping of the SDA. NYSERDA conducted a new LiDAR survey in 2015 to update and supplement the 2010 survey of the Buttermilk Creek watershed. The survey extended to include the neighboring Connoisarauley Creek watershed and the Cattaraugus Creek corridor from the WNYNSC to Lake Erie. The updated 2015 LiDAR data deliverable will be provided in early 2016.

Figure 3-3. LiDAR-Derived Topographic Map of the SDA and Surrounding Area

Source: NYSERDA



4 Facility Operations and Maintenance

NYSERDA is responsible for the safety, operations and maintenance of the buildings and grounds at the SDA. Both routine and nonroutine facility inspections and maintenance activities are implemented to ensure that the facility is operating as designed. In 2015, facility operations and maintenance at the SDA included:

- Inspections and Testing.
- Maintenance.

4.1 Inspections and Testing

NYSERDA actively maintains the facilities at the SDA through routine inspections and testing of all physical and mechanical systems, followed by prompt corrective actions, as needed. All inspections are documented on standard forms and maintained as WVSMP records. Any deficiencies noted during these inspections and tests are tracked in the WVSMP Maintenance Log, scheduled for completion and closed out in a timely manner.

In 2015, NYSERDA completed the following inspections and tests:

- Monthly SDA Building inspections.
- Monthly and annual fire extinguisher inspection and testing.
- Five walkover inspections of the entire SDA, and surrounding slopes and streams.
- Annual geomembrane cover system inspection.

All systems and operations at the SDA are performing as designed.

4.2 Maintenance

In 2015, NYSERDA completed the following routine and preventative maintenance at the SDA:

- Repaired miscellaneous punctures and tears on the XR-5 geomembrane covers.
- Snowplowing and vegetation control at the SDA and Bulk Storage Warehouse.
- Supported tasks for the annual deer hunting program on the WNYNSC.

NYSERDA completed the following nonroutine maintenance activities at the SDA in 2015:

- Completed the focused topographic survey of Trenches 8 and 13 for subsidence.
- Cleared vegetation and rocks from Stormwater Outfall W-04.
- Cleared obstruction in Stormwater Outfall W-02 and installed 20 ft of new stormwater pipe.
- Completed maintenance on the SDA camera.

All nonroutine maintenance actions are tracked from start to finish in the WVSMP maintenance log.

4.2.1 Geomembrane Cover Inspection and Repair

During an SDA inspection in May, water was observed to be trapped under the geomembrane cover near the stormwater pipe outlet on the east side of Trench 8. This area was observed to determine if the cause was water impoundment that was increasing with rain events, or if it could be attributed to a failed geomembrane seam near the outlet of the pipe or a breach in the pipe itself. The perched water did not appear to accumulate during the observed timeframe, nor did it appear to dissipate or permeate into the underlying soils. After a closer inspection of the area, it appeared that stormwater may have been infiltrating under the geomembrane near the area where the pipe exits the geomembrane cover. The perched water was removed from below the geomembrane and a 10-ft pipe extension was added to divert the water from where the pipe exits the geomembrane. NYSERDA continued to observe the area throughout the field season, and there was no further accumulation of water beneath the cover.

4.3 Engineered Construction Projects

On July 14, 2015, a localized extreme storm event occurred resulting in over 3.9 inches of rain. Damage to the erosion control structures on Erdman and Frank's Creek was identified (e.g., displacement of rock armoring and erosion of the streambed and stream banks). Both of these areas functioned as designed by controlling the erosive forces of the stream, and minimizing additional streambank and bed erosion.

4.3.1 Erdman Brook Erosion Control Repairs

Damage sustained during the July storm event to Erdman Brook adjacent to the SDA consisted of minor stream bank scour and a loss of aggregate in the stream channel. NYSERDA had an engineering design completed to restore the area with additional enhancements to aid in preventing future erosion. This work was completed in September 2015. Figure 4-1 shows the completed restoration.

Figure 4-1. Erdman Brook Enhancements and Restoration

Source: NYSERDA

4.3.2 Erdman Brook Retaining Wall Bracing

NYSERDA has been monitoring the retaining wall structure at Erdman Brook from 2013-2015 and has identified that the walls are tilting inward at an increasing rate. NYSERDA is currently working with their former engineering services contractor to develop a mitigative design that can be implemented during the 2016 field season to address the tilting.

As an interim repair, NYSERDA engaged their current engineering services contractor to design a temporary bracing system. The design was installed by NYSERDA's Operations and Maintenance contractor in September and will be replaced by the long-term repair in 2016. Figure 4-2 shows the temporary bracing.

Figure 4-2. Erdman Brook Retaining Wall Temporary Bracing

Source: NYSERDA

4.3.3 Frank's Creek Erosion Control Repairs

The extreme storm event in July 2015 washed out sections of the Frank's Creek erosion controls leaving bare soils prone to erosion. NYSERDA requested a mitigative design with enhancements from their engineering services contractor, and implemented the repairs by the end of 2015. The new design incorporated the same engineering requirements as the initial design, with the addition of enhancements to the upper plunge pool. (This plunge pool was regraded and lined with medium-sized stone grouted in place to dissipate the energy of the creek.) Downstream check dams and micropools were also re-established to maintain the aquatic habitat. Figure 4-3 shows the Frank's Creek restoration.

Figure 4-3. Frank's Creek Enhancements and Restoration

Source: NYSERDA

5 Waste Management

NYSERDA has developed and implemented both systems and procedures to manage the SDA in a manner that minimizes the generation of radioactive or hazardous waste.

In 2015, waste management at the SDA included:

- Inspections.
- Waste generation and storage.

5.1 Inspections

In 2015, NYSERDA completed four waste inspections. No deficiencies were noted during these inspections.

5.2 Waste Removal and Disposal

NYSERDA is not a routine generator of waste. Approximately 0.01 m^3 of low-level radioactive waste was generated in 2015.

The total volume of waste currently in storage is 0.16 m^3. All waste currently in storage is low-level radioactive waste only.

Appendix A – Trench Leachate Elevation Data

Table A-1. 2015 Trench Leachate Elevation Data

Elevations are referenced to the National Geodetic Vertical Datum (NGVD) of 1929.

Source: NYSERDA

Trench	Jan. 6	Feb. 4	March 3	April 1	May 5	May 28
Trench 1			1365.76			1365.79
Trench 2			1361.03			1361.01
Trench 3			1360.40			1360.40
Trench 4			1362.71			1362.71
Trench 5			1363.18			1363.19
Trench 8			1361.39			1361.37
Trench 9			1360.54			1360.47
Trench 10s			1360.73			1360.66
Trench 10n			1361.63			1361.63
Trench 11			1360.34			1360.25
Trench 12			1361.10			1361.09
Trench 13	1363.56	1363.55	1363.54	1363.51	1363.52	1363.49
Trench 14	1366.02	1366.02	1366.01	1366.02	1366.03	1366.04
Wp-91	1366.01	1366.00	1366.01	1365.98	1365.98	1365.95

Table A-1 continued

Trench	June 29	August 4	Sept. 1	October 1	Nov. 3	Nov. 30
Trench 1			1365.81			1365.81
Trench 2			1361.03			1361.02
Trench 3			1360.41			1360.41
Trench 4			1362.70			1362.69
Trench 5			1363.22			1363.20
Trench 8			1361.40			1361.36
Trench 9			1360.41			1360.41
Trench 10s			1360.64			1360.63
Trench 10n			1361.62			1361.61
Trench 11			1360.22			1360.22
Trench 12			1361.01			1360.92
Trench 13	1363.49	1363.49	1363.50	1363.48	1363.47	1363.48
Trench 14	1366.09	1366.11	1366.11	1366.11	1366.12	1366.11
Wp-91	1365.99	1366.01	1366.03	1366.03	1366.03	1366.04

Figure A-1. 2005-2015 Leachate Elevations, Trench 1

Source: NYSERDA

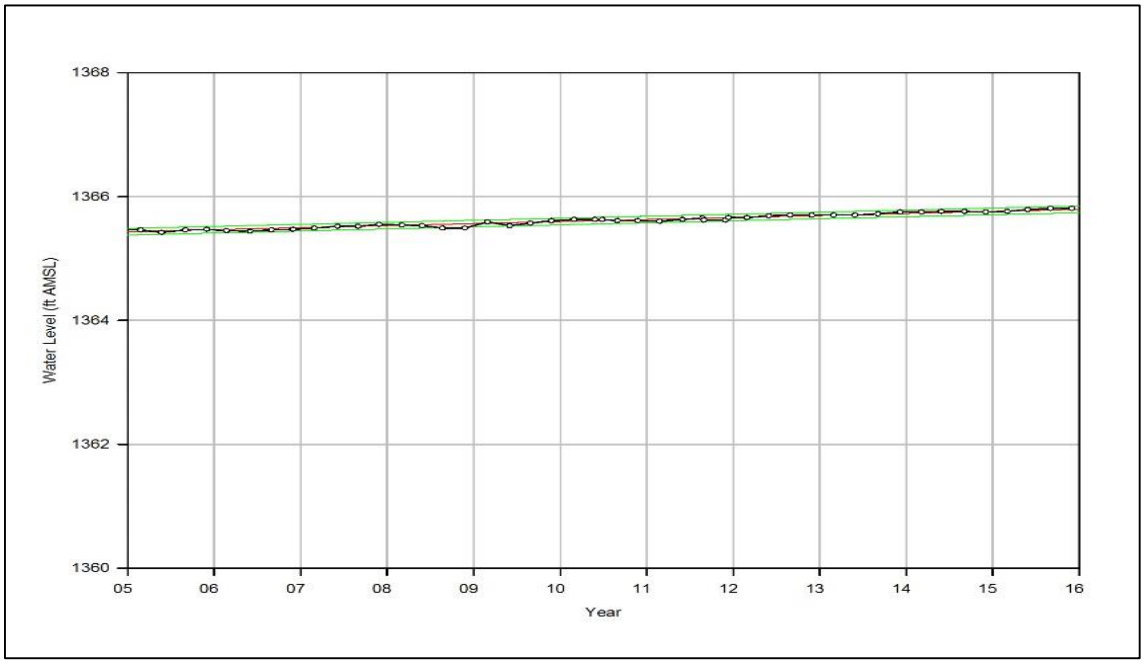


Figure A-2. 2005-2015 Leachate Elevations, Trench 2

Source: NYSERDA

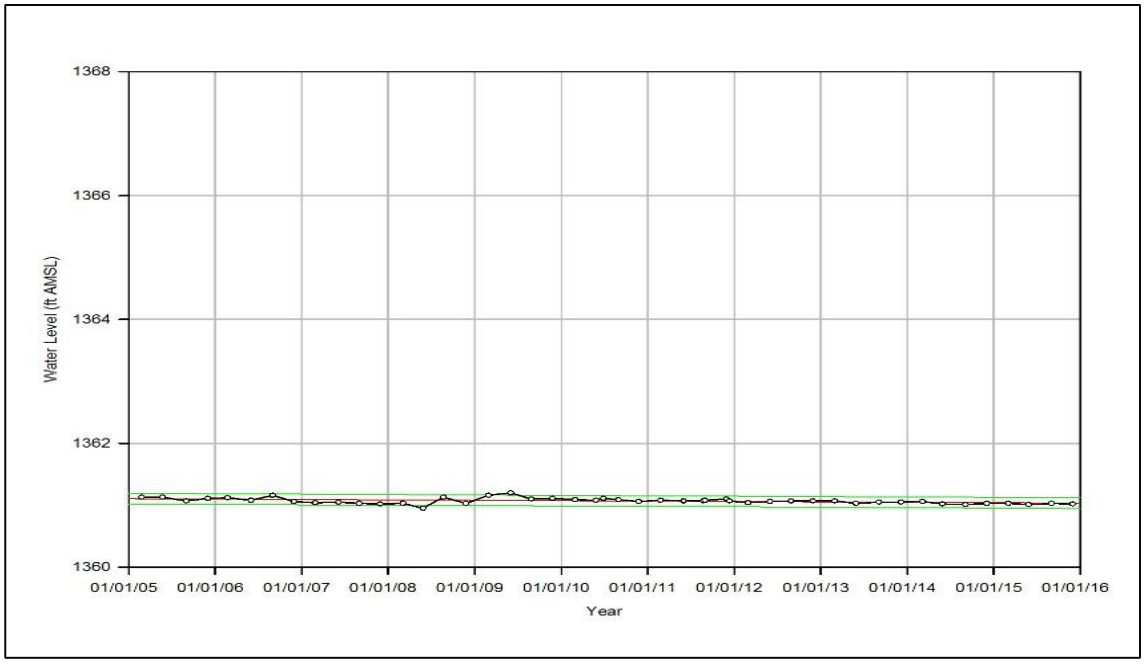
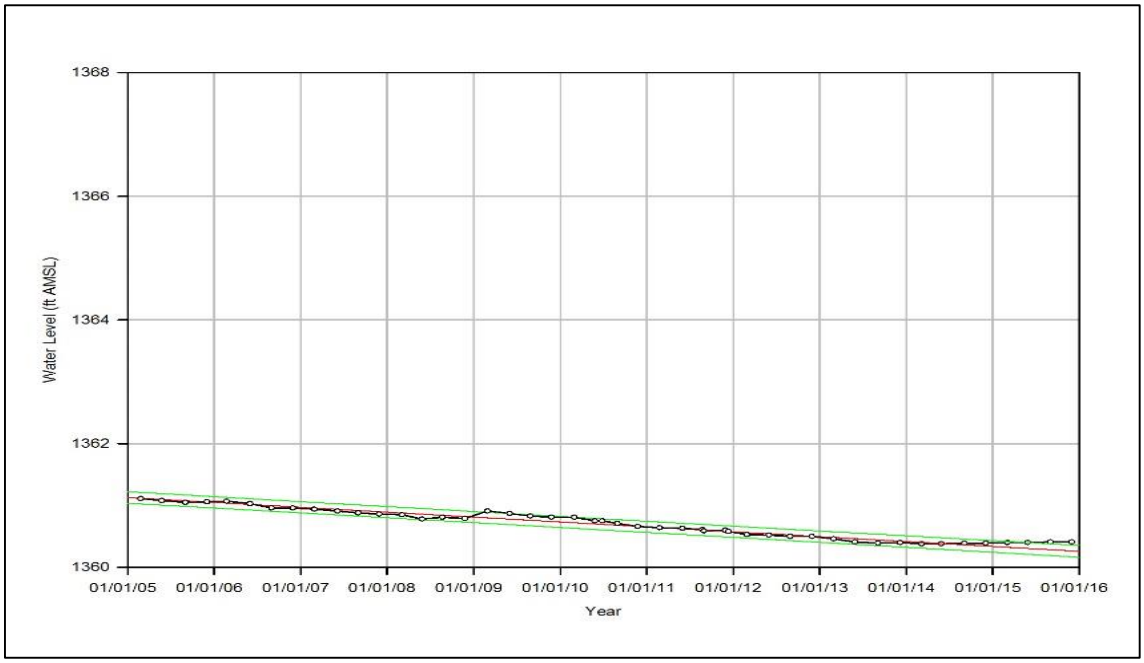


Figure A-3. 2005-2015 Leachate Elevations, Trench 3

Decreasing Trend (a)

Source: NYSERDA



Potentially Increasing Trend (b)

Source: NYSERDA

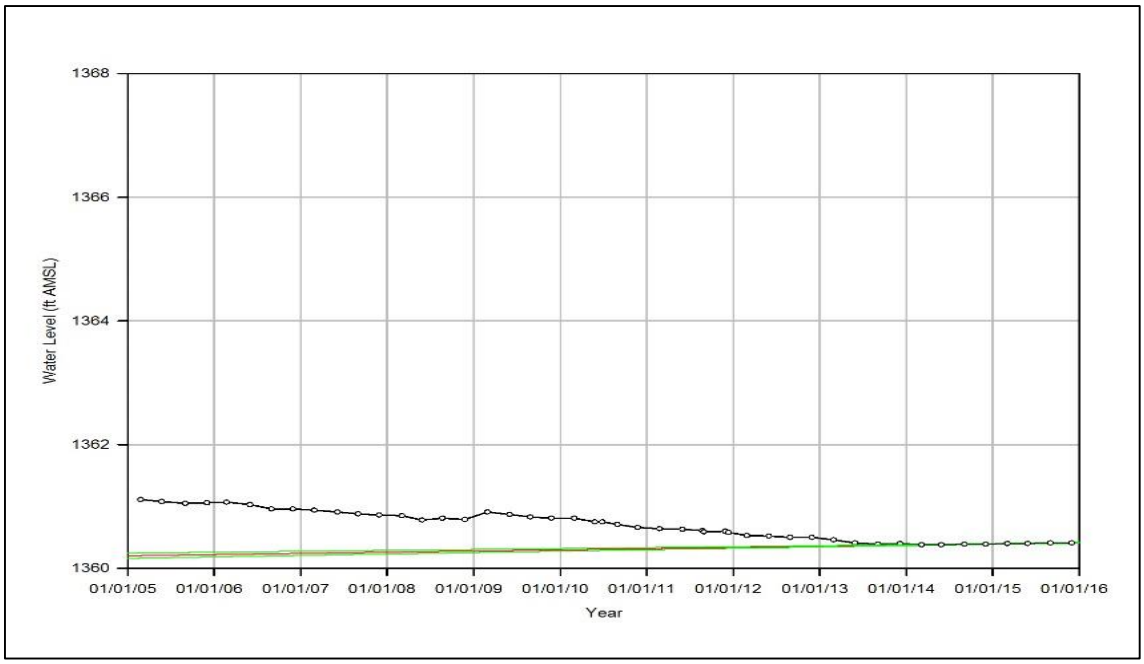


Figure A-4. 2005-2015 Leachate Elevations, Trench 4

Source: NYSERDA

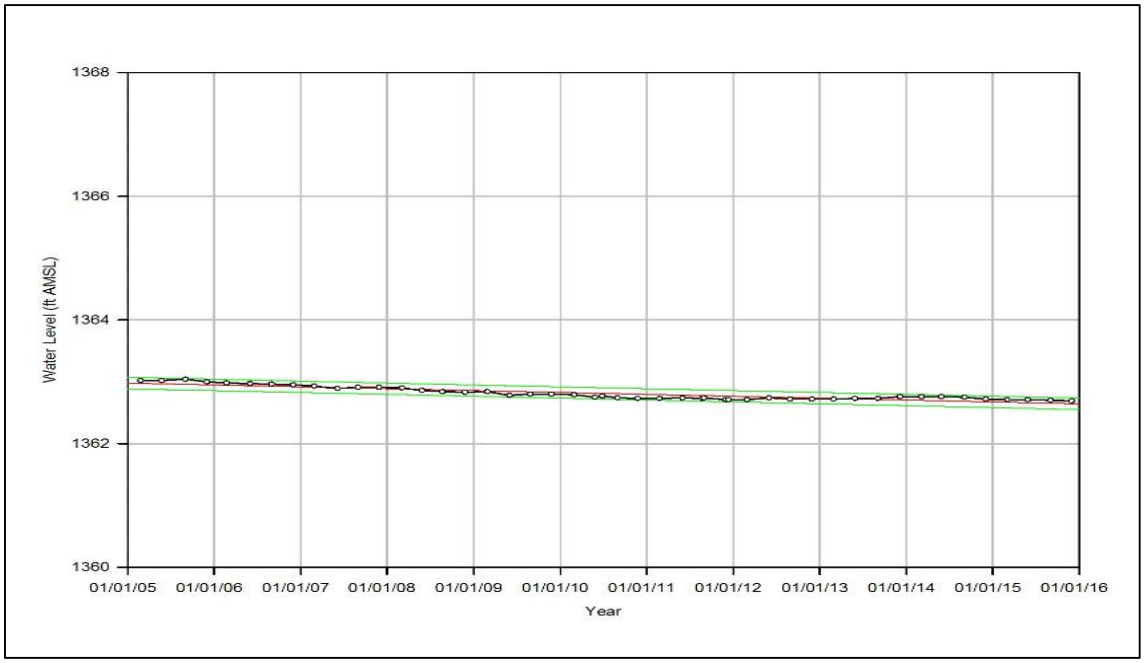


Figure A-5. 2005-2015 Leachate Elevations, Trench 5

Source: NYSERDA

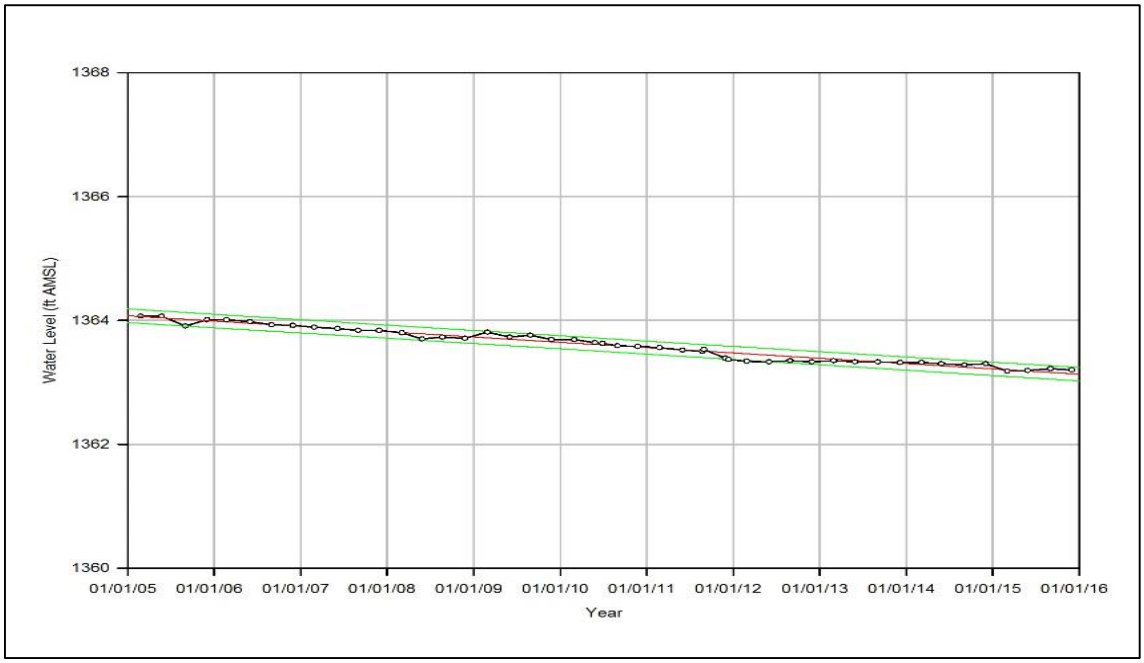


Figure A-6. 2005-2015 Leachate Elevations, Trench 8

Source: NYSERDA

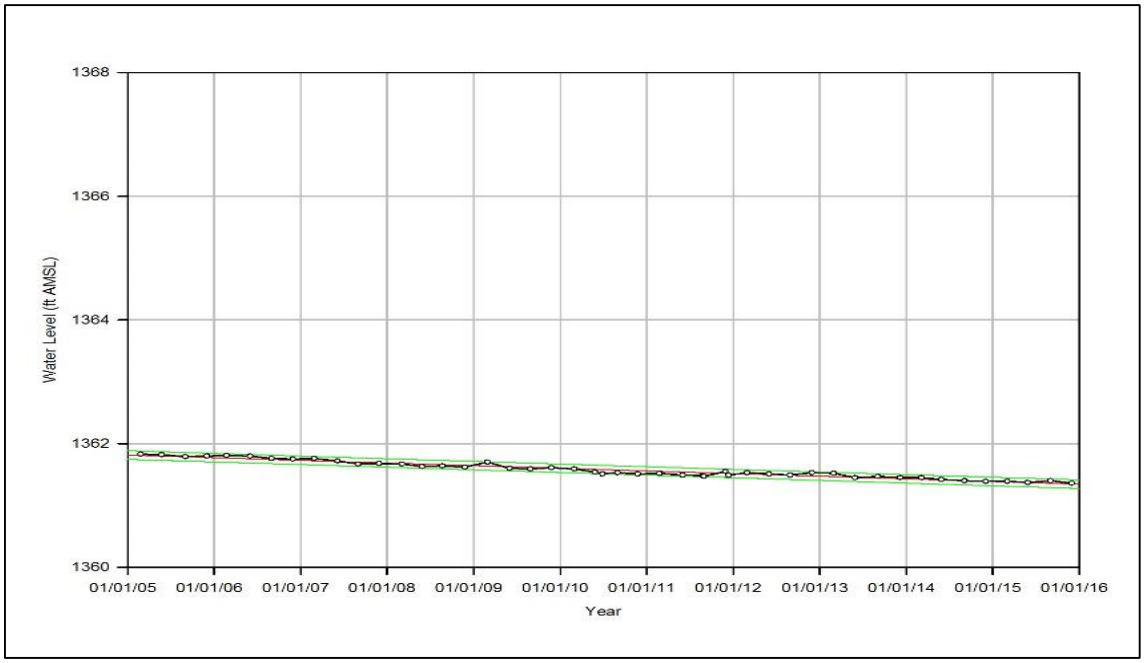


Figure A-7. 2005-2015 Leachate Elevations, Trench 9

Source: NYSERDA

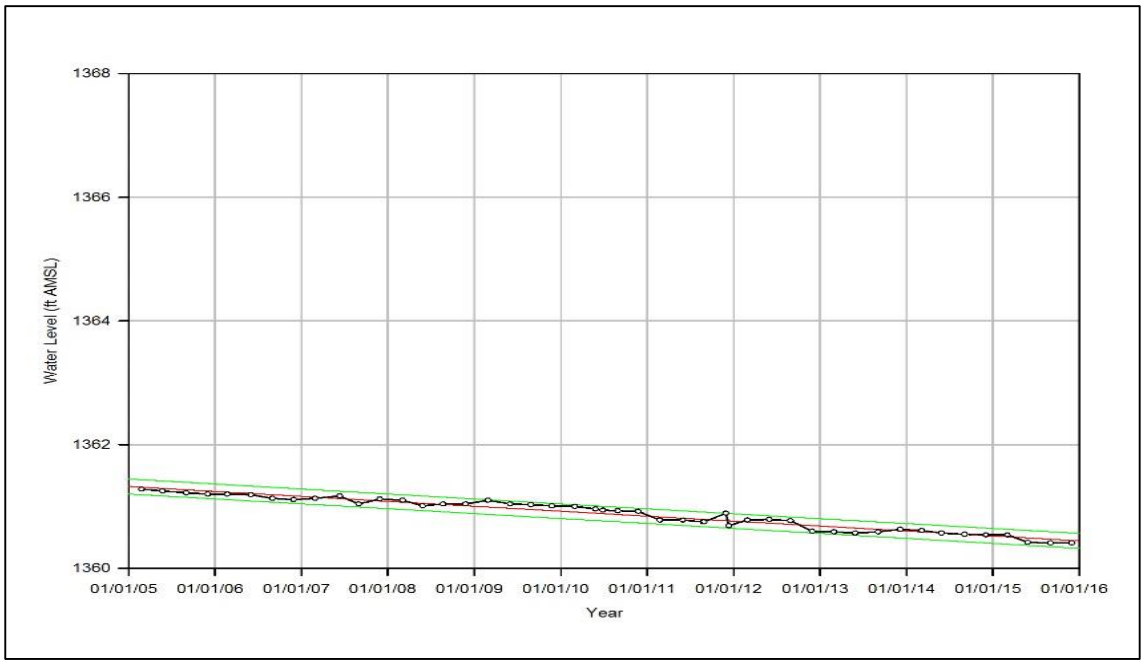


Figure A-8. 2005-2015 Leachate Elevations, Trench 10N

Source: NYSERDA

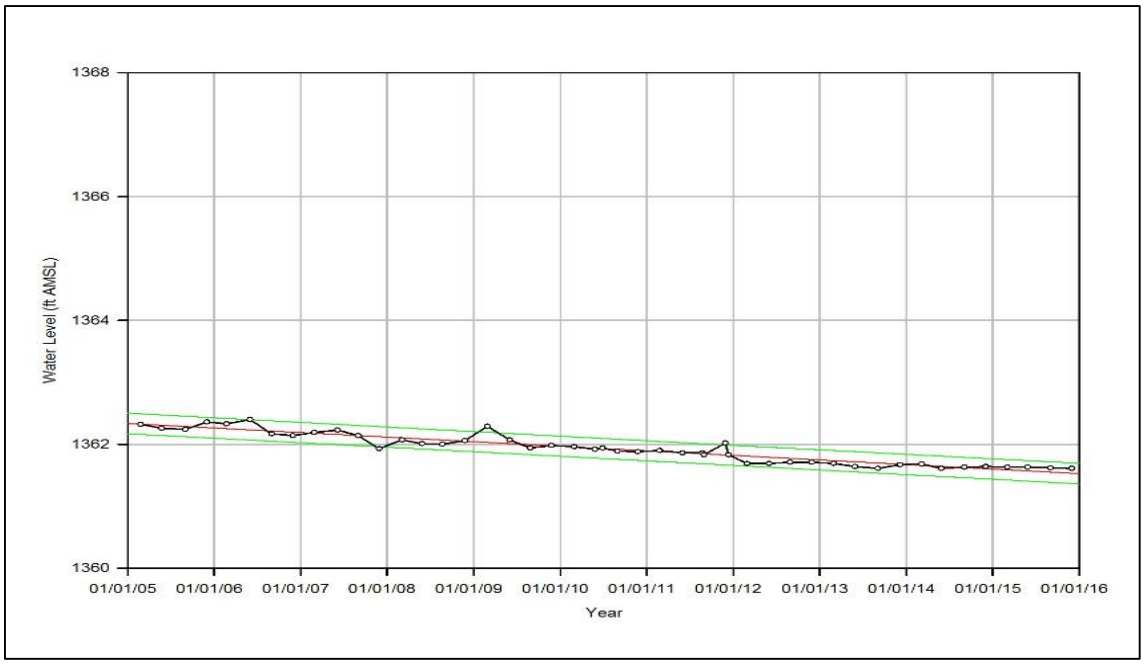


Figure A-9. 2005-2015 Leachate Elevations, Trench 10S

Source: NYSERDA

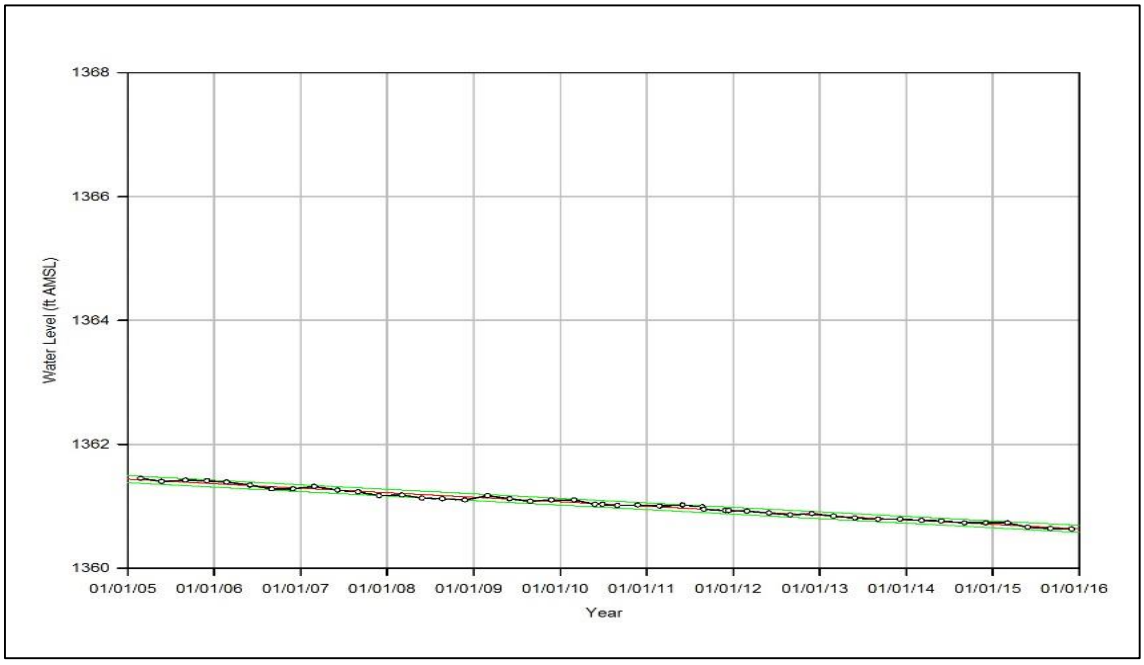


Figure A-10. 2005-2015 Leachate Elevations, Trench 11

Source: NYSERDA

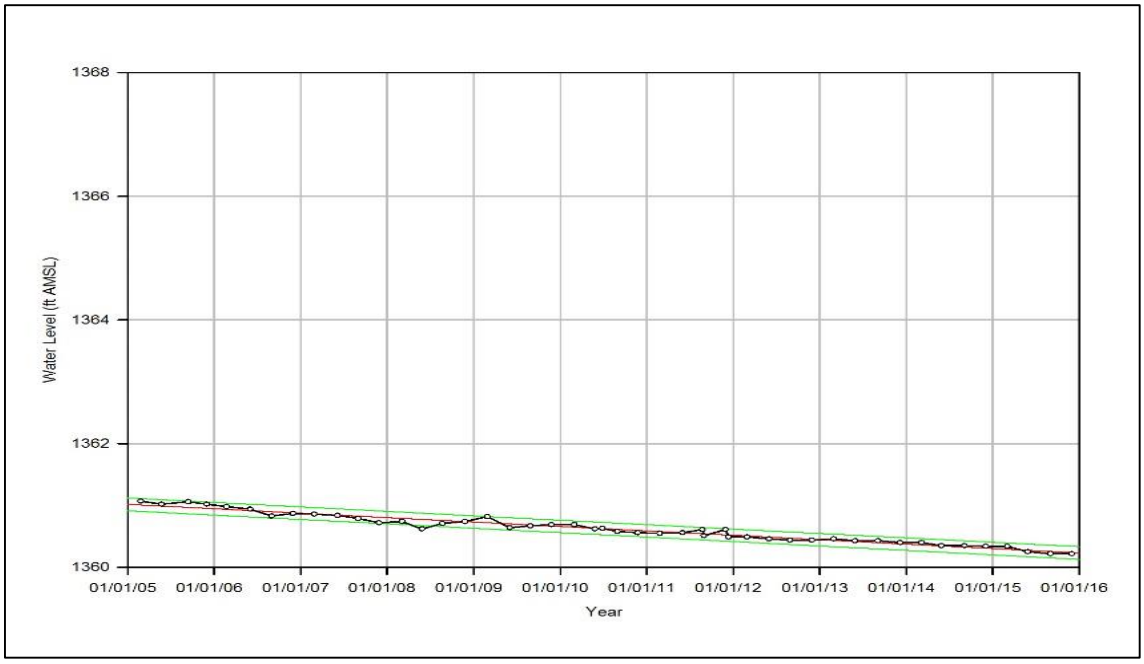


Figure A-11. 2005-2015 Leachate Elevations, Trench 12

Source: NYSERDA

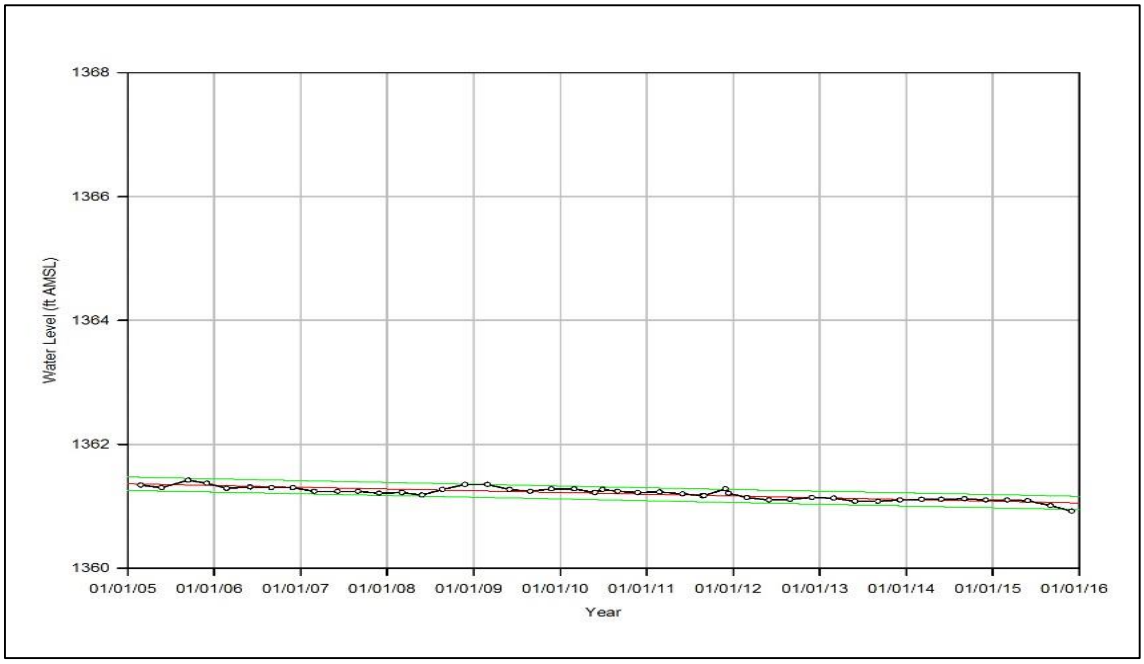


Figure A-12. 2005-2015 Leachate Elevations, Trench 13

Source: NYSERDA

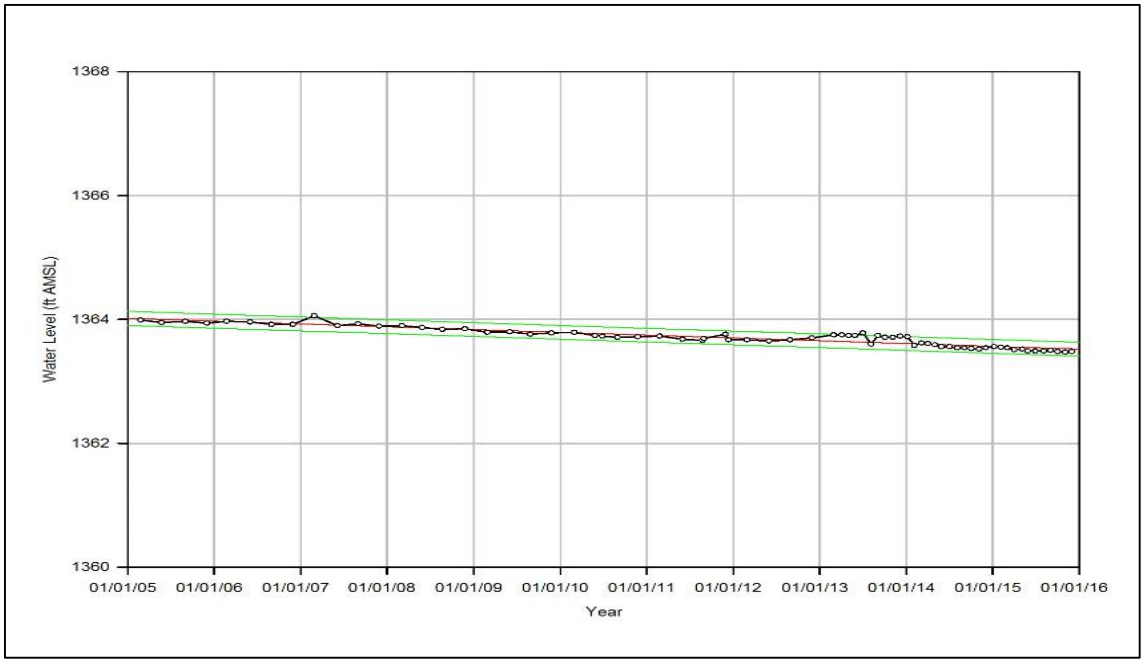


Figure A-13. Trench 14 Leachate (Water) Elevations for the Period 1997 to 2015, Inclusive

Source: NYSERDA

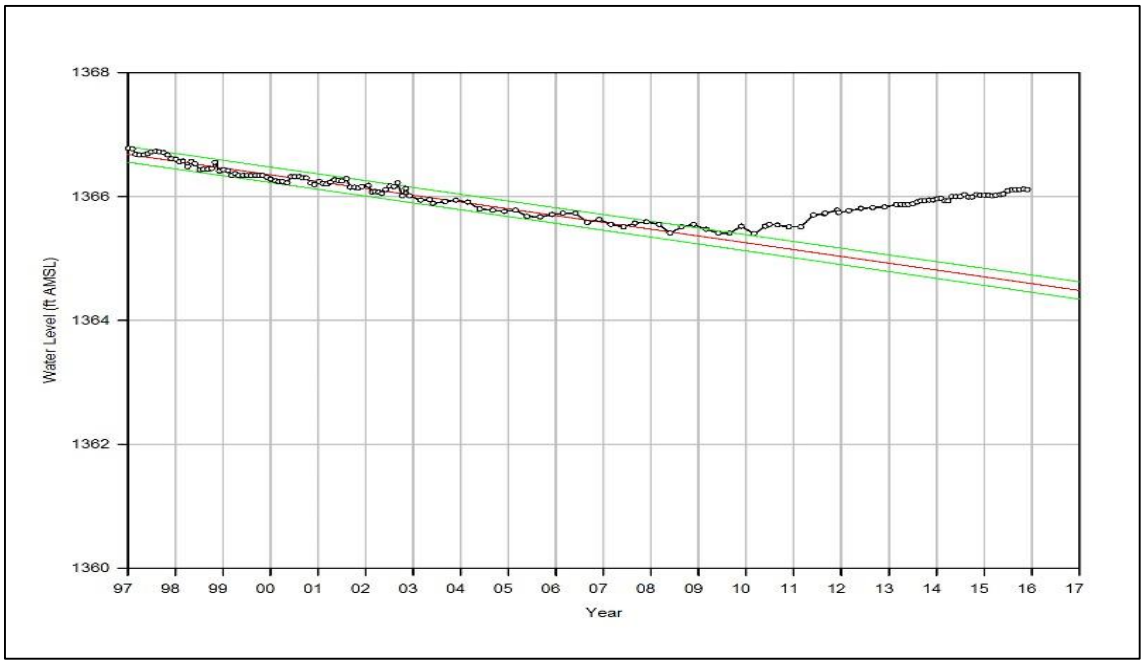
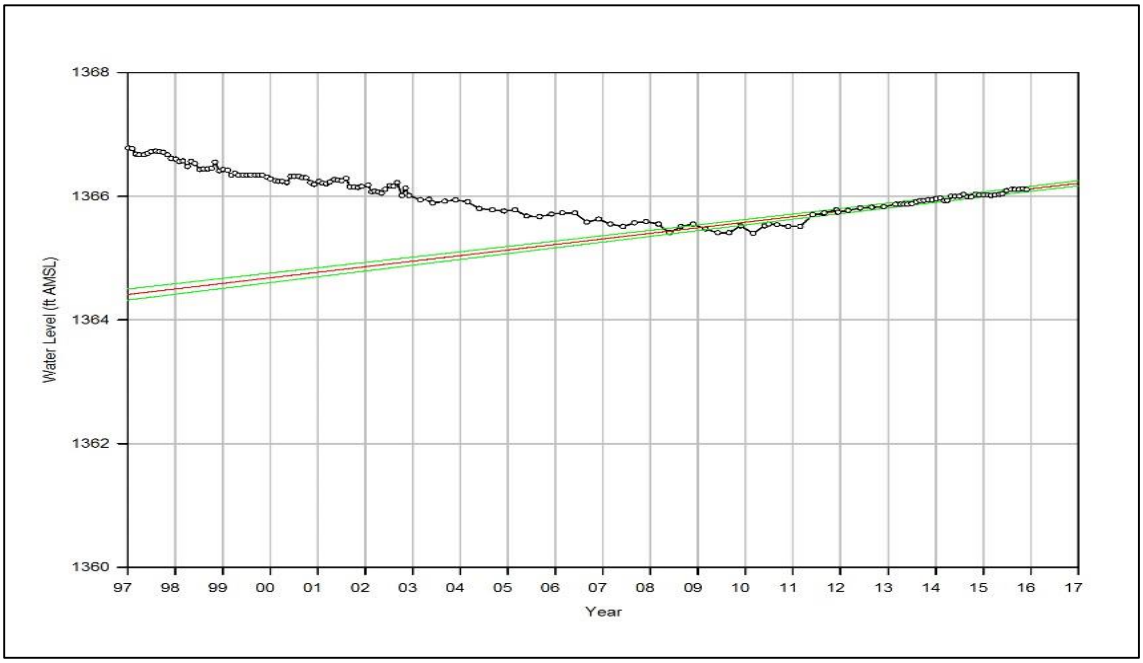


Figure A-14. Trench 14 Leachate (Water) Elevations for the Period 2011 to 2015, Inclusive

Source: NYSERDA



Appendix B – Groundwater Monitoring

Table B-1. Groundwater Monitoring Well Summary – SDA 1100 Series Wells

Well depths are rounded. Elevations are referenced to the National Geodetic Vertical Datum (NGVD) of 1929 and based on well construction details.

Source: NYSERDA

Well	Well Depth (ft BGS)	Well Bottom Elevation (ft AMSL)	Screened Interval Elevations (ft AMSL)	Geologic Unit Screened
1101A	16	1363.46	1363.88 - 1373.88	W/U
1101B	30	1349.51	1349.93 – 1359.93	U
1101C	109	1270.22	1270.64 - 1285.64	L
1102A	17	1365.80	1366.22 - 1376.22	W/U
1102B	31	1351.68	1352.10 - 1362.10	U
1103A	16	1363.99	1364.41 – 1374.41	W/U
1103B	36	1343.92	1344.34 - 1359.34	U
1103C	121	1258.60	1259.02 - 1274.02	L/O
1104A	19	1357.21	1357.63 – 1372.63	W/U
1104B	36	1340.19	1340.61 - 1355.61	U
1104C	124	1252.05	1252.47 - 1262.47	L/O
1105A	21	1344.90	1345.32 - 1355.32	U
1105B	36	1330.53	1330.53 - 1345.53	U
1106A	16	1358.45	1358.87 – 1368.87	W/U
1106B	31	1343.71	1344.13 - 1354.13	U
1107A	19	1358.26	1358.68 – 1373.68	W/U
1108A	16	1365.02	1365.44 - 1375.44	W/U
1109A	16	1358.95	1359.37 - 1369.37	W/U
1109B	31	1343.11	1343.53 - 1358.53	U
1110A	20	1357.14	1357.56 - 1367.56	W/U
1111A	21	1359.31	1359.73 - 1369.73	U

Key:

L	Lacustrine Unit (Kent recessional sequence)
L/O	Lacustrine/Outwash - Kame Sand and Gravel (Kent recessional sequence)
U	Unweathered Till
W/U	Weathered/Unweathered Till

Table B-2. 2015 Groundwater Elevations - SDA 1100-Series Wells – (Feet Above Mean Sea Level)

Elevations are referenced to the National Geodetic Vertical Datum (NGVD) of 1929. Entries are blank for locations/dates for which water elevation was not measured.

Source: NYSERDA

Well	Jan. 6	Feb. 4	March 3	April 1	May 5	May 28	June 29
1101A	1373.08	1376.77	1377.06	1378.11	1377.79	1377.00	1370.78
1101B	1354.02	1362.21	1363.68	1363.64	1363.79	1363.64	1355.06
1101C	1282.17	1282.26	1282.05	1282.32	1282.08	1282.17	1282.40
1102A			1379.24			1378.62	
1102B			1367.48			1366.86	
1103A			1379.06			1378.36	
1103B			1366.27			1365.60	
1103C			1260.08			1260.08	
1104A			1373.66			1373.53	
1104B			1362.25			1362.74	
1104C			1253.87			1253.89	
1105A			1354.69			1355.83	
1105B			1340.43			1341.22	
1106A	1370.85	1370.79	1370.75	1372.37	1371.04	1370.95	1366.12
1106B	1357.09	1358.01	1357.78	1357.25	1357.36	1357.31	1352.84
1107A			1368.81			1368.91	
1108A	1372.95	1374.46	1375.36	1376.61	1376.70	1376.28	1370.40
1109A	1362.25	1362.84	1363.14	1362.95	1362.84	1362.97	1360.39
1109B	1362.29	1362.88	1363.14	1362.93	1362.82	1362.98	1360.38
1110A			1360.46			1359.64	
1111A			1377.53			1376.80	

Table B-2 continued.

Well	Aug. 4	Sept. 1	Oct. 1	Nov. 3	Nov. 30
1101A	1376.39	1376.28	1375.84	1377.86	1377.91
1101B	1358.93	1361.95	1363.32	1364.24	1364.86
1101C	1282.37	1282.15	1282.15	1282.18	1281.97
1102A		1378.31			1379.49
1102B		1367.11			1367.94
1103A		1377.71			1378.94
1103B		1365.75			1366.43
1103C		1260.08			1260.04
1104A		1372.24			1373.18
1104B		1362.14			1362.60
1104C		1253.90			1253.84
1105A		1353.22			1356.24
1105B		1337.49			1340.87
1106A	1370.24	1370.41	1371.50	1372.71	1372.13
1106B	1358.00	1358.82	1359.29	1359.50	1359.44
1107A		1369.26			1369.27
1108A	1373.72	1374.70	1374.69	1375.20	1374.50
1109A	1363.46	1364.17	1364.41	1364.43	1364.20
1109B	1363.53	1364.18	1364.38	1364.41	1364.16
1110A		1360.39			1360.96
1111A		1376.29			1377.66

Table B-3. Groundwater Monitoring Well Summary – SDA Piezometers

Elevations are referenced to the National Geodetic Vertical Datum (NGVD) of 1929 and based on the piezometer construction details.

Source: NYSERDA

Piezometer	Well Depth (ft BGS)	Well Bottom Elevation (ft AMSL)	Screened Interval Elevations (ft AMSL)	Geologic Unit Screened
1S-91	14	1369.56	1369.56 - 1377.06	W/U
2S-91	16	1369.55	1369.55 - 1379.55	W/U
3S-91	13.5	1365.78	1365.78 - 1373.28	W/U
4S-91	11	1370.16	1370.16 - 1375.16	W/U
4D-91	29	1352.16	1352.16 - 1367.16	U
6S-91	11	1371.20	1371.20 - 1376.20	W/U
6D-91	25	1357.20	1357.20 - 1367.20	U
9S-91	9	1372.71	1372.71 - 1377.71	W/U
9D-91	25	1356.71	1356.71 - 1366.71	U
10S-91	12.4	1367.75	1367.75 - 1375.25	W/U
15S-91	13	1366.59	1366.59 - 1374.09	W/U
16D-91	25	1354.99	1354.99 - 1364.99	U
17S-91	11	1373.23	1373.23 - 1378.23	W/U
18S-91	14	1367.20	1367.20 - 1374.70	U
21S-91	16	1366.20	1366.20 - 1371.20	U
22S-91	21	1362.42	1362.42 - 1367.42	U
24S-91	18	1363.00	1363.00 - 1373.00	W/U
B-14	24	1356.57	1356.57 - 1366.57	U
P1-95[a]	7.7	1360.89	1360.89 - 1365.89	W

Key:

U	Unweathered Till
W	Weathered Till
W/U	Weathered/Unweathered Till

[a] P1-95 was installed using the direct push method.

Table B-4. 2015 Groundwater Elevations - SDA Piezometers – (Feet Above Mean Sea Level)

Elevations are referenced to the National Geodetic Vertical Datum (NGVD) of 1929. Entries are blank for locations/dates for which water elevation was not measured.

Source: NYSERDA

Well/ Piezometer	Jan. 6	Feb. 4	March 3	April 1	May 5	May 28	June 29
1S			1380.88			1380.95	
2S			NM			1381.74	
3S	1374.49	1374.82	1375.49	1376.64	1376.69	1376.19	1376.59
4S	dry	dry	dry	dry	dry	dry	dry
4D	1357.55	1357.19	1356.72	1356.26	1355.86	1355.95	1356.50
6S	dry	dry	dry	dry	dry	dry	dry
6D	1362.37	1361.93	1361.48	1361.14	1360.84	1360.81	1361.29
9S	dry	dry	dry	dry	dry	dry	dry
9D	1358.22	1358.17	1357.77	1357.41	1357.13	1357.51	1357.51
10S	1372.72	1372.28	1372.00	1372.06	1373.03	1374.32	1376.21
15S	1380.33	1380.42	1380.93	1380.43	1378.94	1378.92	1380.55
16D	1364.53	1364.14	1363.81	1363.66	1363.36	1363.21	1363.27
17S	1382.82	1382.22	1382.24	1383.03	1382.57	1381.77	1382.43
18S	1378.22	1378.39	1378.16	1378.66	1378.81	1378.60	1378.81
21S	dry	dry	dry	dry	dry	dry	dry
22S	dry	dry	dry	dry	dry	dry	dry
24S	dry	dry	dry	dry	dry	dry	dry
B-14	1361.05	1360.67	1360.37	1359.91	1360.62	1359.62	1359.84
P1			NM			1363.31	

Table B-4 continued.

Well/ Piezometer	Aug. 4	Sept. 1	Oct. 1	Nov. 3	Nov. 30
1S		1380.32			1376.00
2S		1381.39			1377.36
3S	1376.27	1375.33	1374.51	1369.69	1372.01
4S	dry	dry	dry	dry	dry
4D	1356.98	1357.37	1357.81	1358.19	1358.02
6S	dry	dry	dry	dry	dry
6D	1362.25	1362.74	1363.40	1363.60	1363.24
9S	dry	dry	dry	dry	dry
9D	1357.24	1357.60	1358.24	1358.38	1358.22
10S	1377.08	1377.24	1376.70	1375.09	1374.00
15S	1378.76	1378.82	1379.67	1380.11	1380.19
16D	1363.70	1363.99	1364.54	1365.05	1365.01
17S	1381.26	1380.18	1379.39	1381.88	1382.09
18S	1378.60	1377.41	1376.46	1376.26	1377.20
21S	dry	dry	dry	dry	dry
22S	dry	dry	dry	dry	dry
24S	dry	dry	dry	dry	dry
B-14	1360.20	1360.55	1360.86	1361.10	1360.88
P1		1363.31			1364.55

Key:

NM Not Measured. Well could not be found in the snow.

Table B-5. Groundwater Monitoring Well Summary - SDA Slit-Trench Wells

Elevations are referenced to the National Geodetic Vertical Datum (NGVD) of 1929 and based on the slit-trench well construction details.

Source: NYSERDA

Slit Trench Well	Well Depth (ft BGS)	Well Bottom Elevation (ft AMSL)	Screened Interval Elevations (ft AMSL)	Geologic Unit Screened
SMW-1	7	1373.77	1373.97 - 1376.17	W
SMW-2	6	1375.00	1375.20 - 1377.40	W
SMW-3	6	1374.44	1374.64 - 1376.84	W
SMW-4	11	1367.05	1367.25 - 1369.45	W/U
SMW-5	7	1371.65	1371.85 - 1373.85	W
SMW-6	7	1373.21	1373.41 - 1375.61	W
SMW-7	6.5	1373.41	1373.61 - 1375.81	W
SMW-8	7	1370.19	1370.39 - 1373.39	W
SMW-9	6	1370.66	1370.86 - 1373.06	W

Key:

W Weathered Till
W/U Weathered/Unweathered Till

Table B-6. 2015 Groundwater Elevations - SDA Slit-Trench Wells – (Feet Above Mean Sea Level)

Elevations are referenced to the National Geodetic Vertical Datum (NGVD) of 1929. Entries are blank for locations/dates for which water elevation was not measured.

Source: NYSERDA

Well	Jan. 6	Feb. 4	March 3	April 1	May 5	May 28	June 29
SMW-1	1379.51	1379.52	1379.66	1379.98	1379.94	1380.05	1380.40
SMW-2	dry	dry	dry	dry	dry	dry	dry
SMW-3	dry	dry	dry	dry	dry	dry	dry
SMW-4	1372.54	1372.94	1374.09	1375.09	1375.76	1375.73	1376.23
SMW-5	1376.63	1376.69	1376.98	1376.78	1376.86	1376.86	1376.83
SMW-6	1379.84	1379.67	1379.79	1379.90	1379.07	1378.92	1380.33
SMW-7	1375.89	1377.04	1378.05	1378.01	1376.86	1376.77	1376.99
SMW-8	1374.02	1374.07	NM	1374.02	1374.79	1375.92	1377.34
SMW-9	1377.07	1377.32	1377.86	1377.40	1376.30	1376.38	1377.03

Well	Aug. 4	Sept. 1	Oct. 1	Nov. 3	Nov. 30
SMW-1	1380.15	1379.24	1378.59	1378.47	1378.81
SMW-2	dry	dry	dry	dry	dry
SMW-3	dry	dry	dry	dry	dry
SMW-4	1376.23	1375.47	1374.07	1371.37	1371.73
SMW-5	1376.59	1376.47	1376.68	1376.31	1376.40
SMW-6	1378.82	1377.79	1379.75	1379.34	1380.00
SMW-7	1376.67	1376.30	1375.84	1375.48	1375.15
SMW-8	1378.12	1377.86	1377.34	1376.06	1374.95
SMW-9	1376.53	1374.92	1373.99	1374.72	1376.20

Key:

NM Not Measured. Well could not be found in the snow.

Figure B-1. First Quarter 2015 Weathered Lavery Till Groundwater Contour Map

Source: NYSERDA

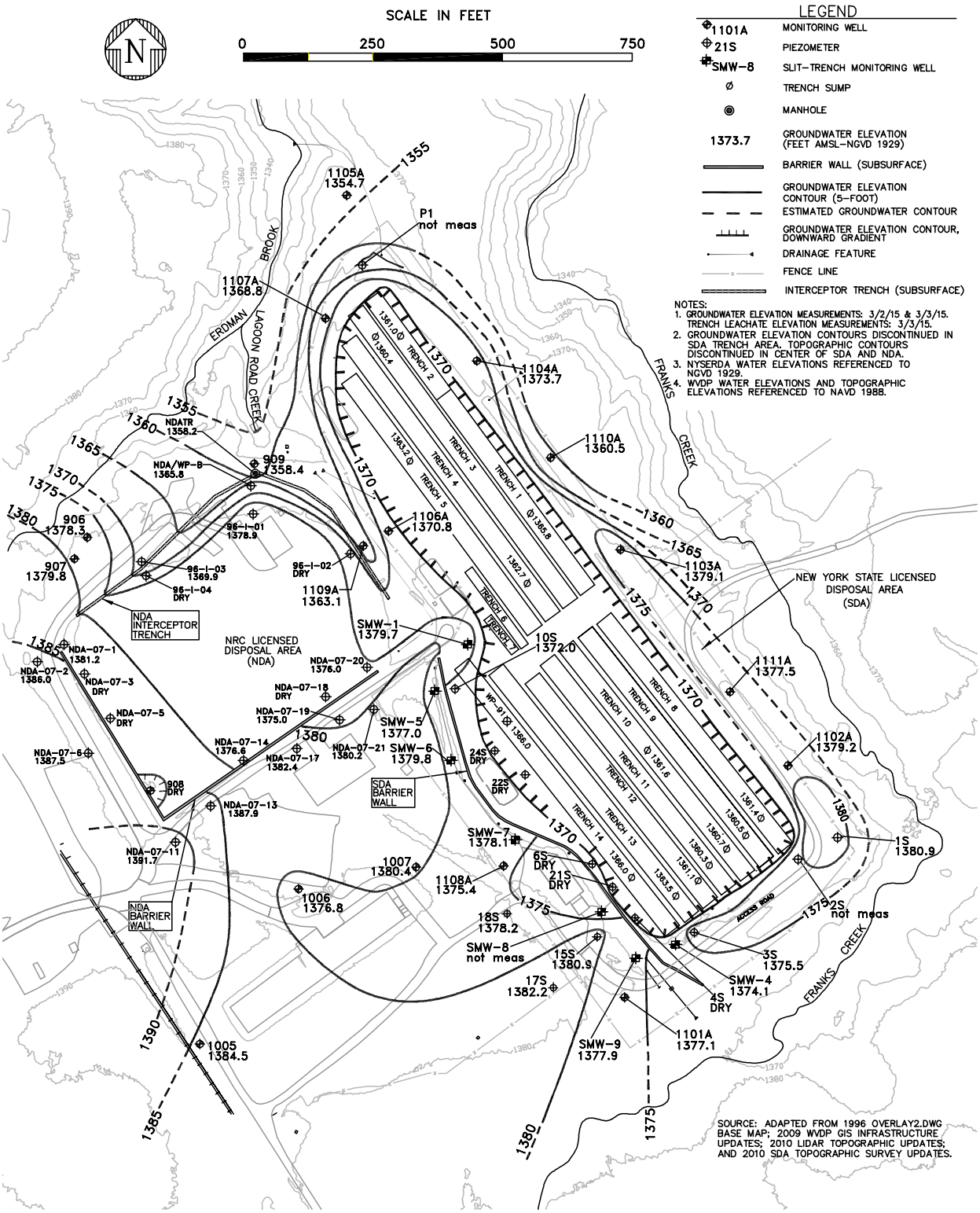


Figure B-2. First Quarter 2015 Kent Recessional Sequence Groundwater Contour Map

Source: NYSERDA

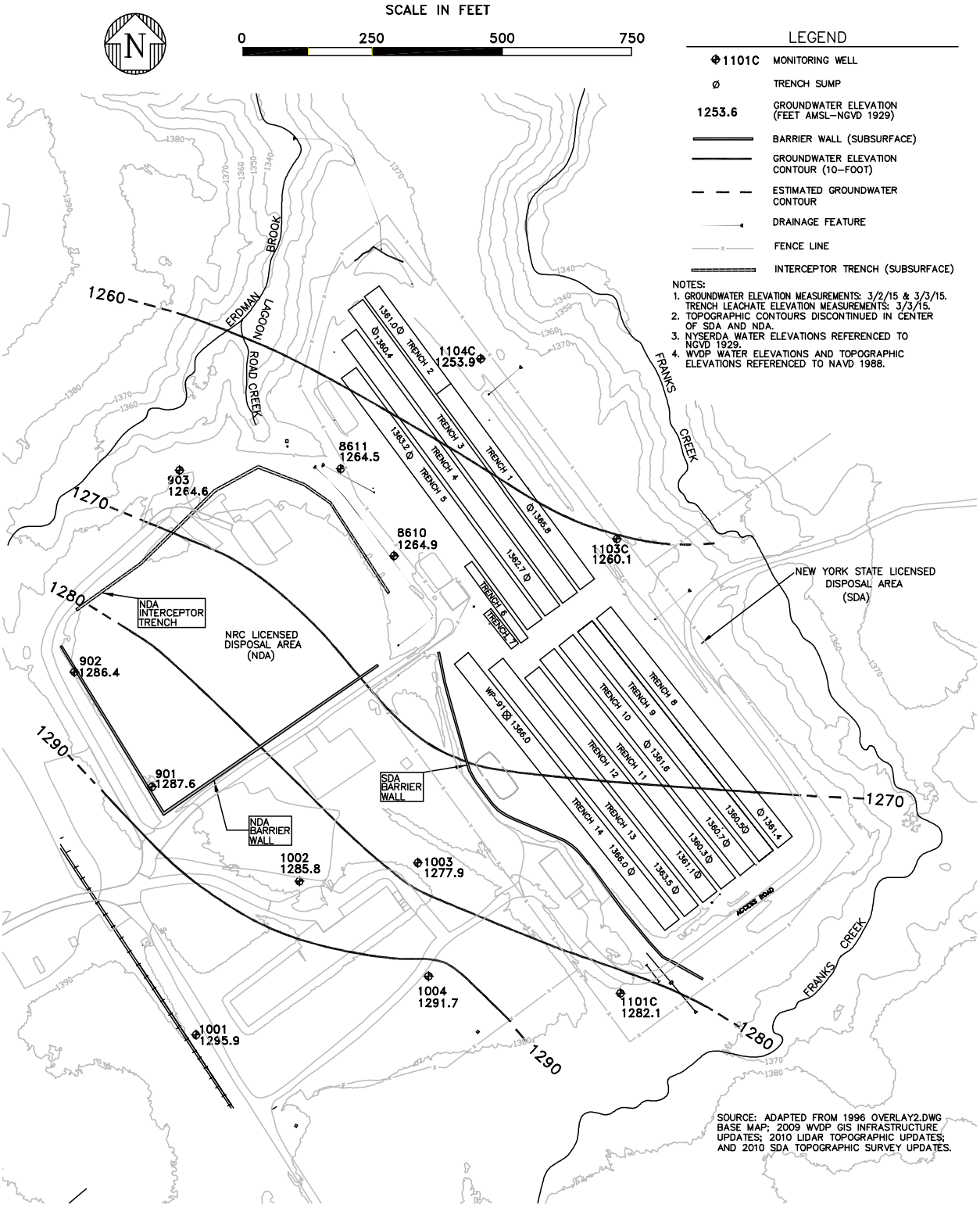


Figure B-3. Second Quarter 2015 Weathered Lavery Till Groundwater Contour Map

Source: NYSERDA

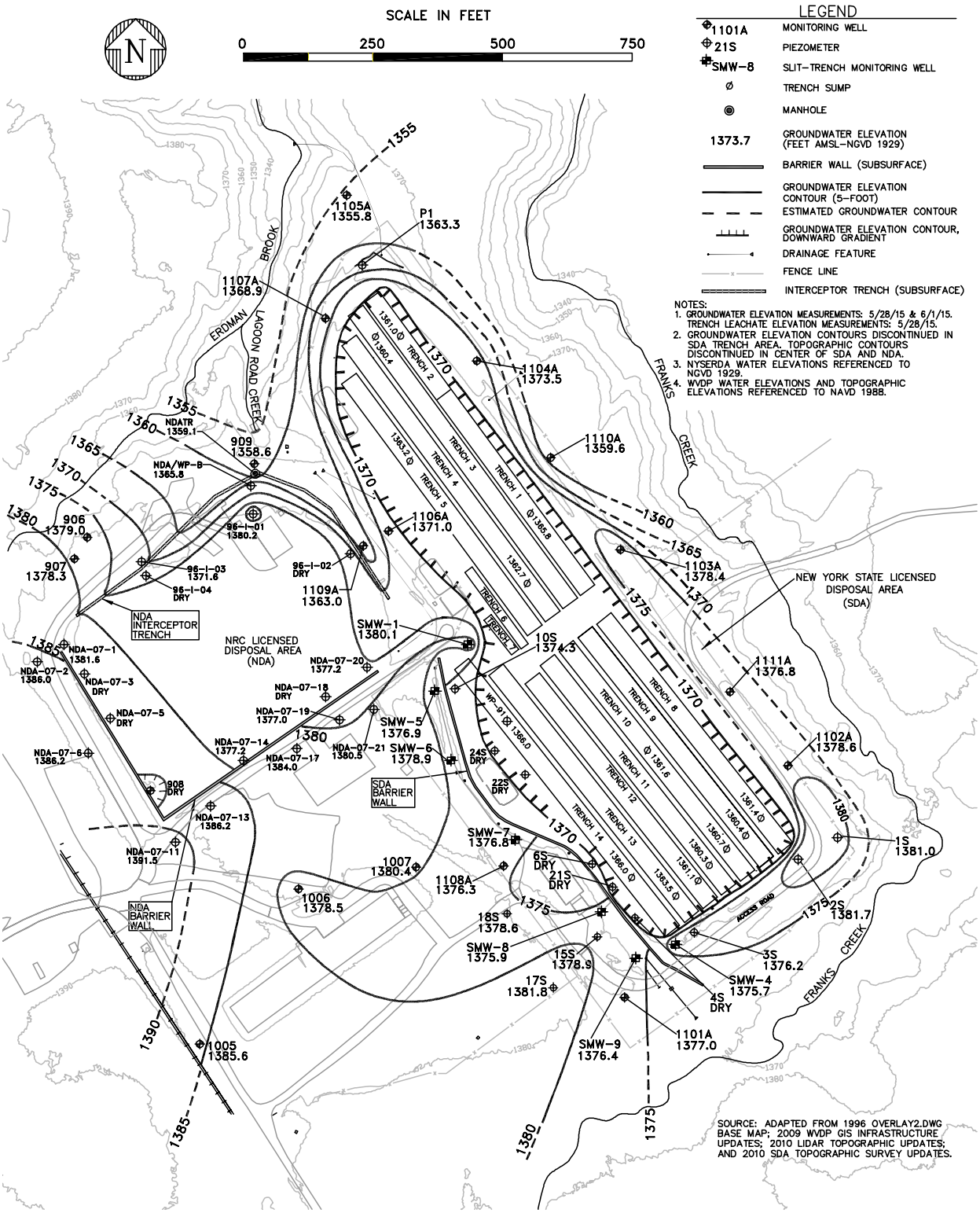


Figure B-4. Second Quarter 2015 Kent Recessional Sequence Groundwater Contour Map

Source: NYSERDA

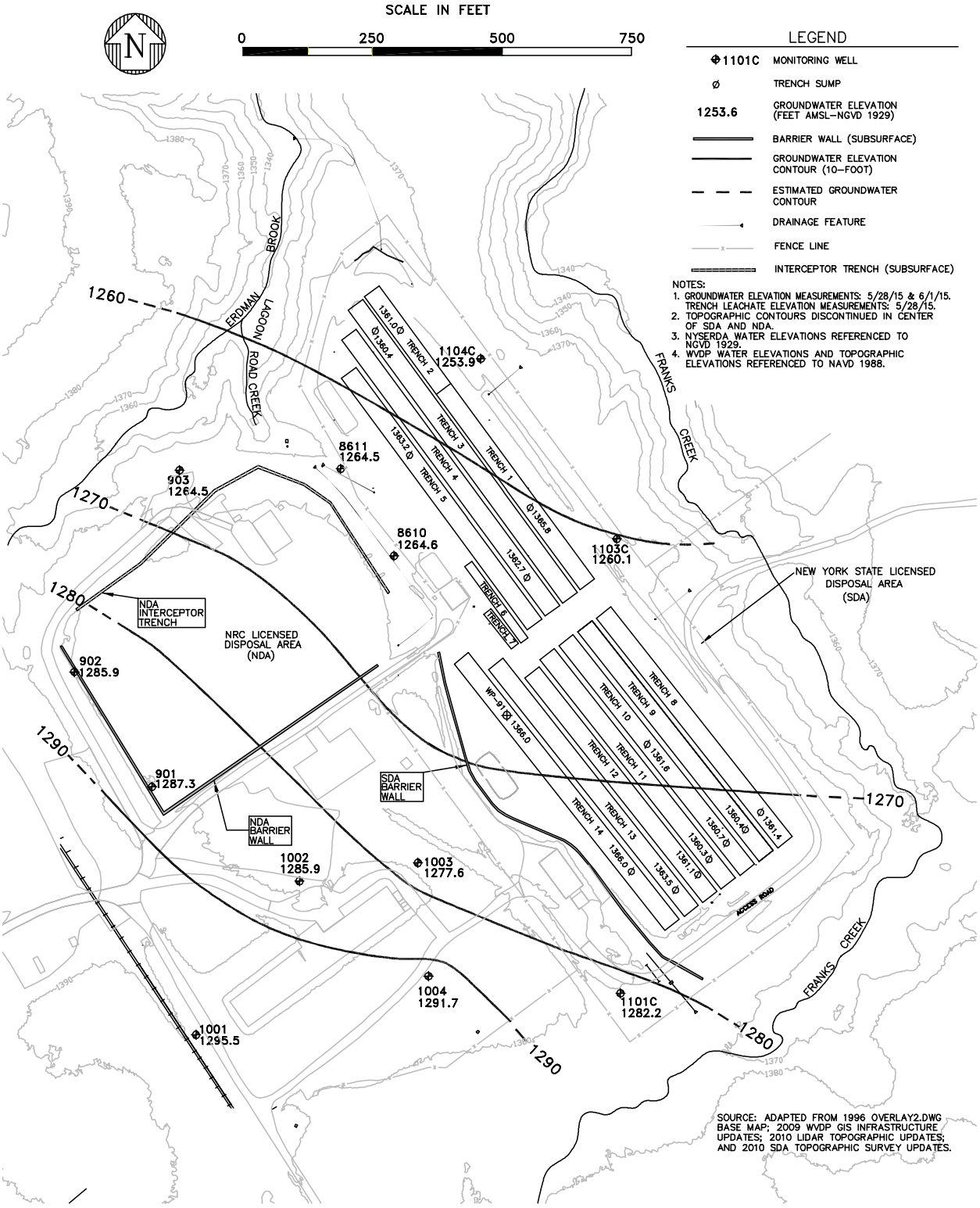


Figure B-5. Third Quarter 2015 Weathered Lavery Till Groundwater Contour Map

Source: NYSERDA

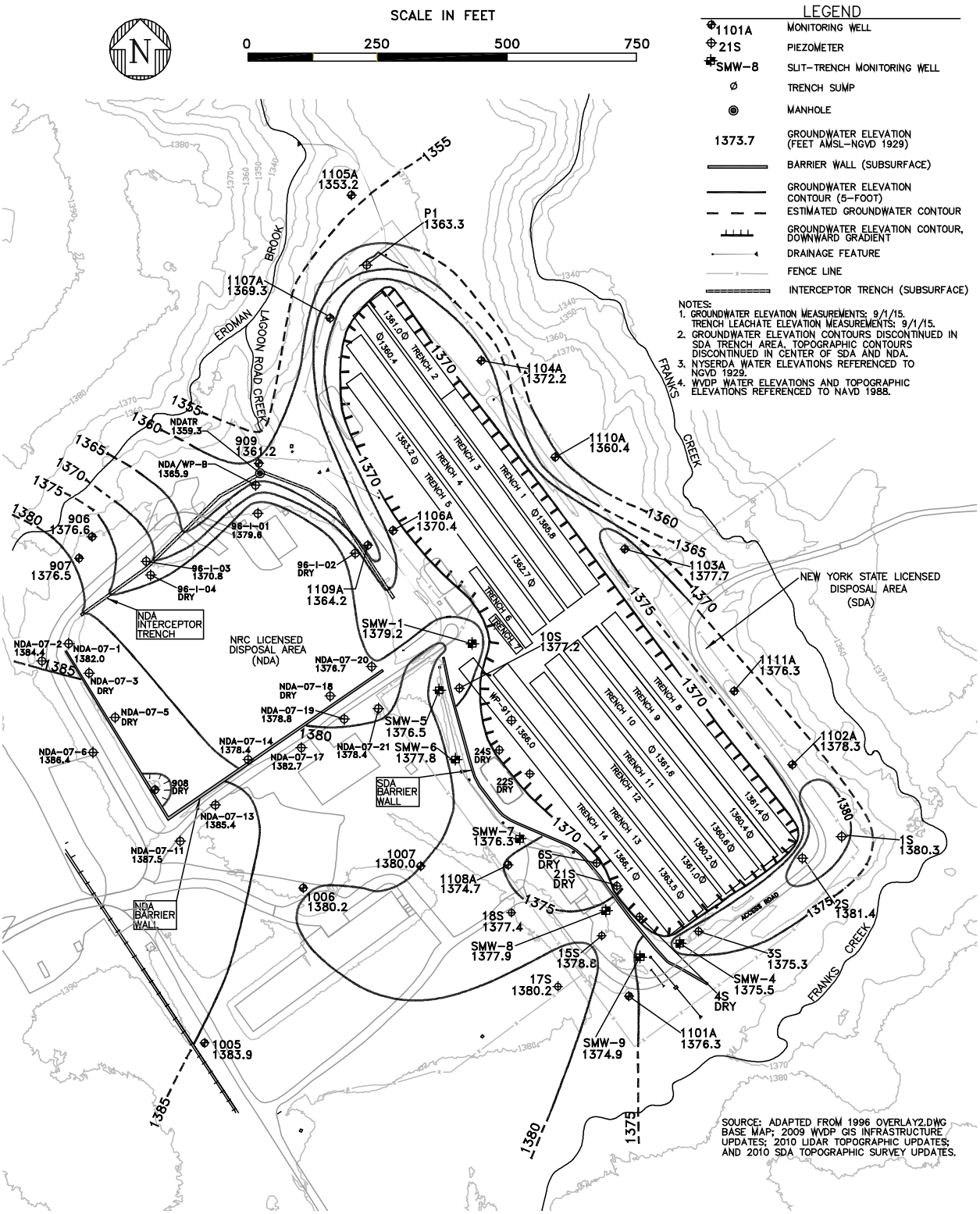


Figure B-6. Third Quarter 2015 Kent Recessional Sequence Groundwater Contour Map

Source: NYSERDA

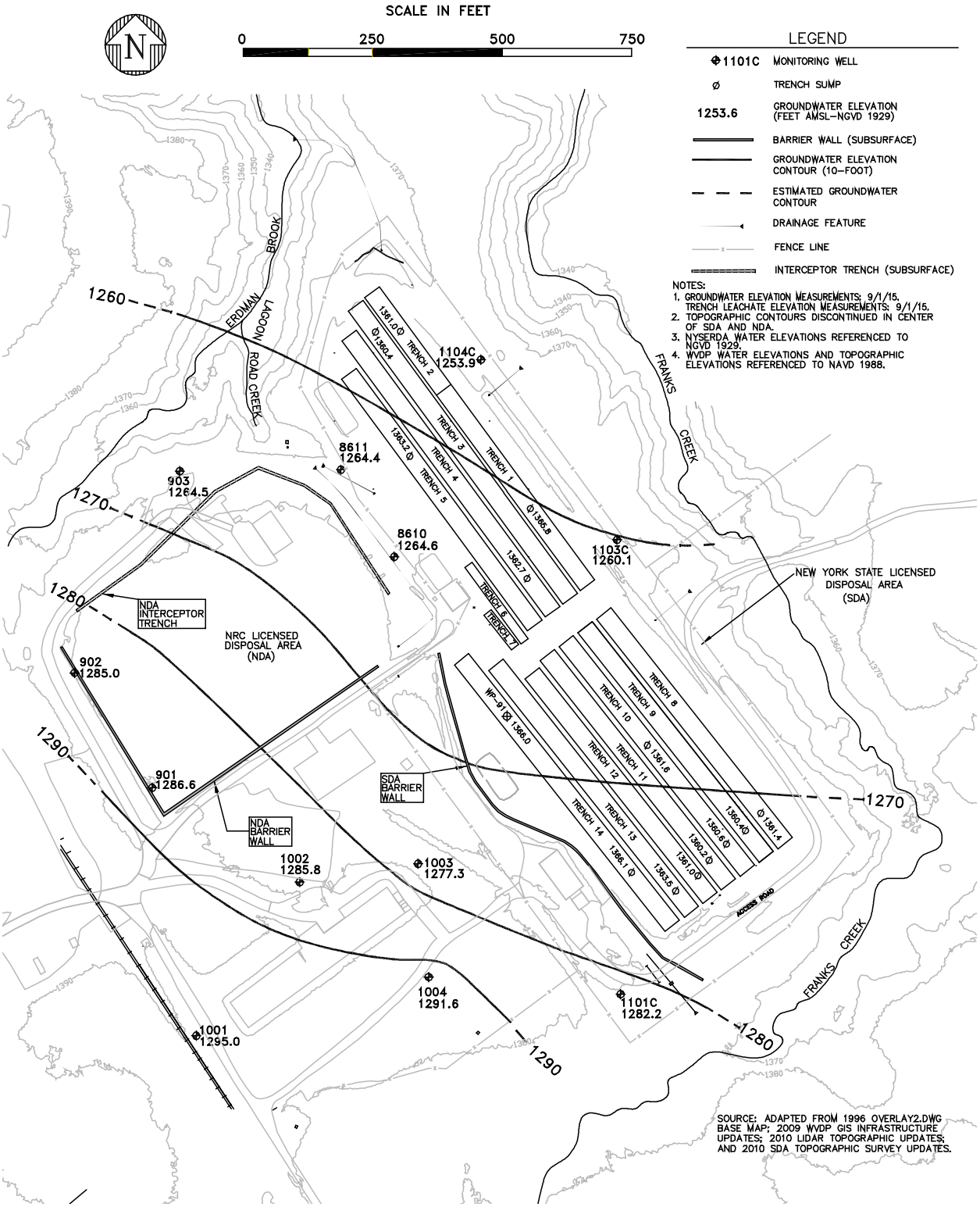


Figure B-7. Fourth Quarter 2015 Weathered Lavery Till Groundwater Contour Map

Source: NYSERDA

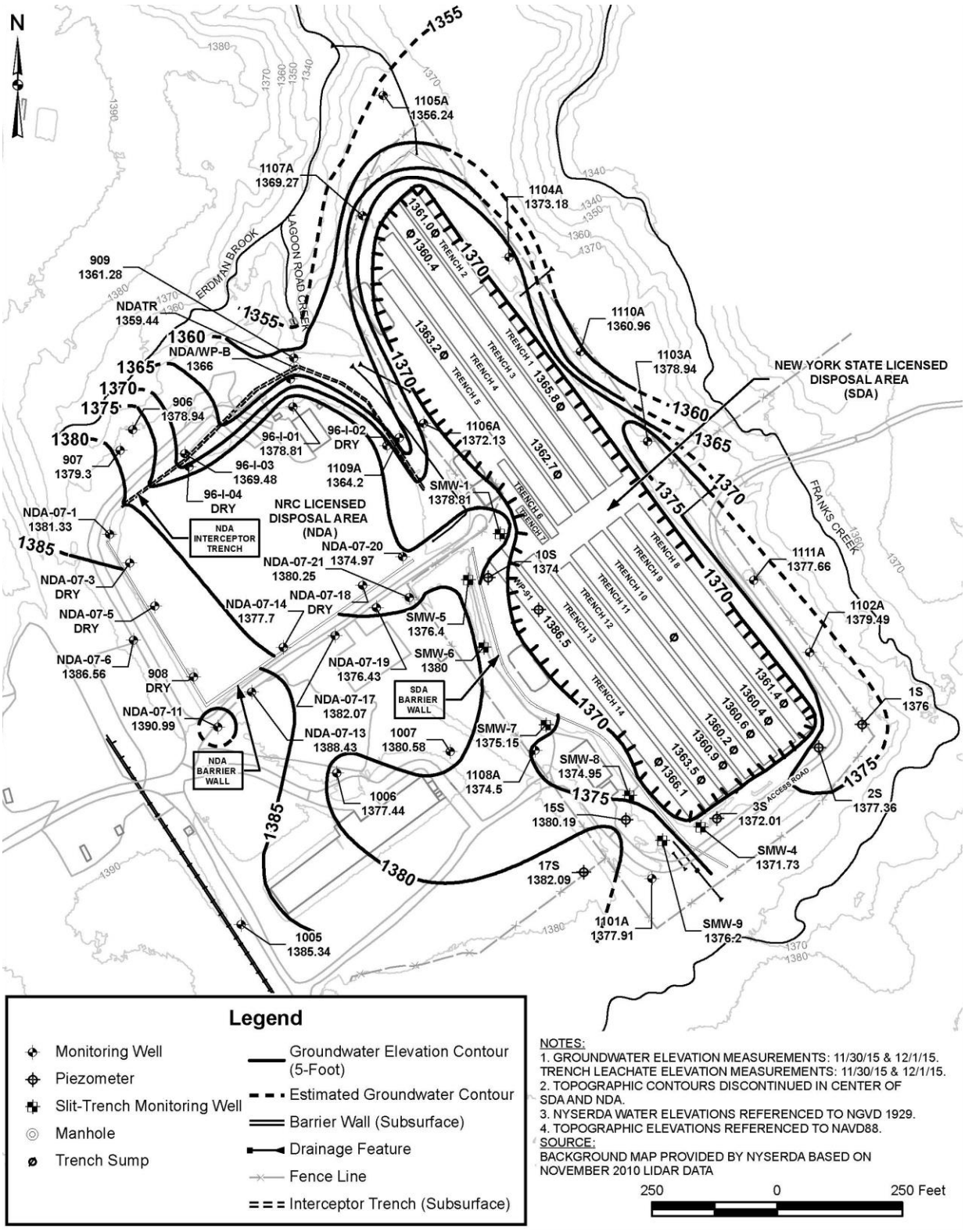


Figure B-8. Fourth Quarter 2015 Kent Recessional Sequence Groundwater Contour Map

Source: NYSERDA

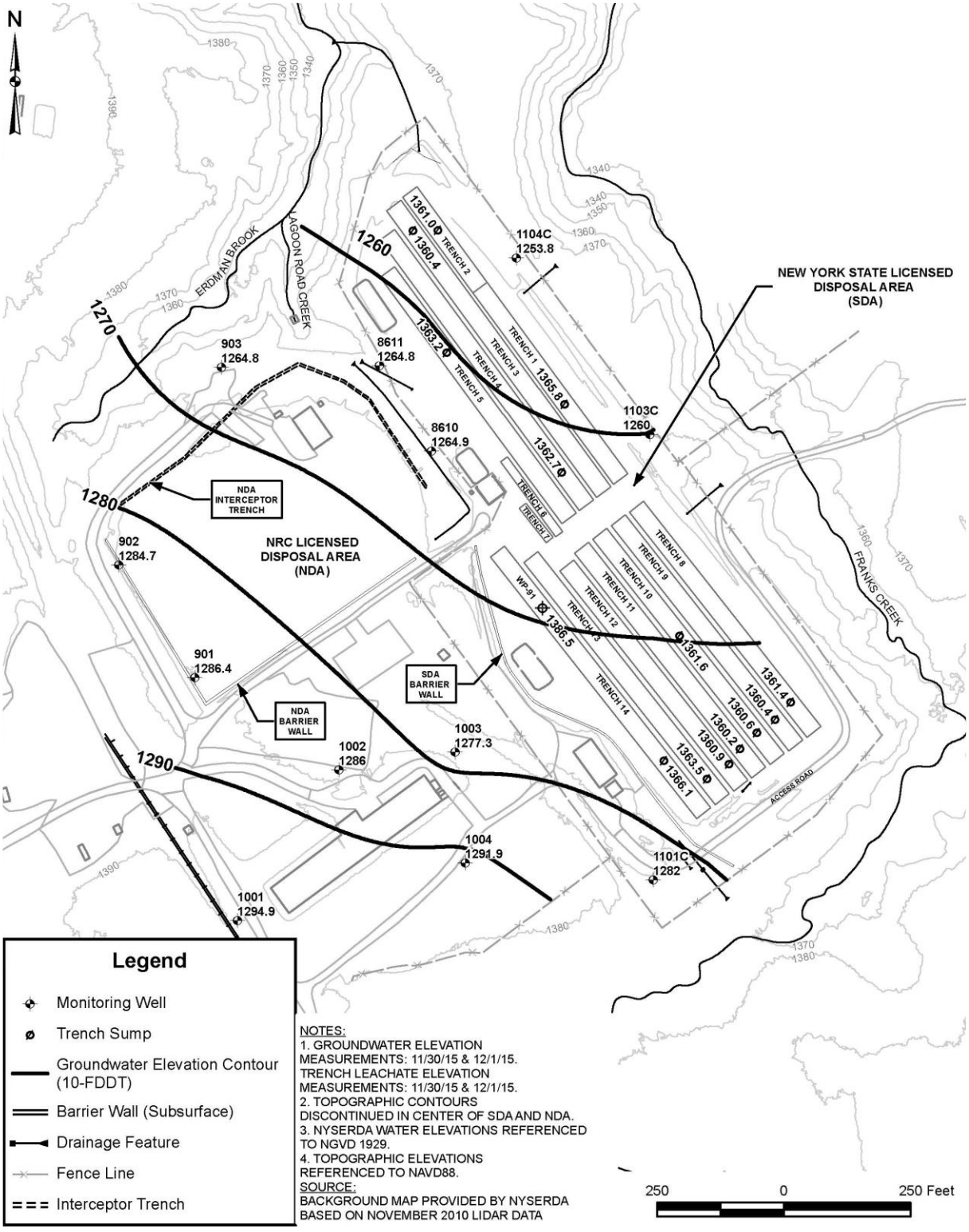


Table B-7. Semiannual Groundwater Sampling Performed in 2015

Source: NYSERDA

Well	Gross Alpha (June)	Gross Alpha (Dec)	Gross Beta (June)	Gross Beta (Dec)	Tritium (June)	Tritium (Dec)	Field Water Quality Parameters (June)	Field Water Quality Parameters (Dec)
1101A	✓	✓	✓	✓	✓	✓	✓	✓
1101B	✓	✓	✓	✓	✓	✓	✓	✓
1101C	✓	✓	✓	✓	✓	✓	✓	✓
1102A	✓	✓	✓	✓	✓	✓	✓[a]	✓
1102B	✓	✓	✓	✓	✓	✓	✓	✓
1103A	✓	✓	✓	✓	✓	✓	✓	✓
1103B	✓	✓	✓	✓	✓	✓	✓	✓
1103C	✓	✓	✓	✓	✓	✓	Insufficient Volume	Insufficient Volume
1104A	✓	✓	✓	✓	✓	✓	✓	✓
1104B	✓	✓	✓	✓	✓	✓	✓	✓
1104C	✓	✓	✓	✓	✓	✓	Insufficient Volume	Insufficient Volume
1105A	✓	✓	✓	✓	✓	✓	✓[b]	✓
1105B	✓	✓	✓	✓	✓	✓	✓[b]	✓
1106A	✓	✓	✓	✓	✓	✓	✓	✓
1106B	✓	✓	✓	✓	✓	✓	✓	✓
1107A	✓	✓	✓	✓	✓	✓	✓	✓
1108A	✓	✓	✓	✓	✓	✓	✓	✓
1109A	✓	✓	✓	✓	✓	✓	✓	✓
1109B	✓	✓	✓	✓	✓	✓	✓	✓
1110A	✓	✓	✓	✓	✓	✓	✓	✓
1111A	✓	✓	✓	✓	✓	✓	✓	✓

[a] Turbidity was tested only due to insufficient sample volume at Well 1102A in June 2015.

[b] A turbidimeter problem precluded turbidity measurements at Wells 1105A and 1105B in June 2015.

Table B-8. Annual Groundwater Sampling Performed in 2015

Source: NYSERDA

Well	Gamma Emitters	Beta Emitters				Volatile Organic Compounds
		C-14	I-129	Sr-90	Tc-99	
1101A	✓	✓	✓	✓	✓	✓
1101B	✓	✓	✓	✓	✓	✓
1101C	✓	✓	✓	✓	✓	✓
1102A	✓	✓	✓	✓	✓	✓
1102B	✓	✓	✓	✓	✓	✓
1103A	✓	✓	✓	✓	✓	✓
1103B	✓	✓	✓	✓	✓	✓
1103C	Insufficient Volume	✓[a]	Insufficient Volume	Insufficient Volume	Insufficient Volume	✓
1104A	✓	✓	✓	✓	✓	✓
1104B	✓	✓	✓	✓	✓	✓
1104C	✓[a]	✓[a]	✓	✓	Insufficient Volume	✓
1105A	✓	✓	✓	✓	✓	✓
1105B	✓	✓	✓	✓	✓	✓
1106A	✓	✓	✓	✓	✓	✓
1106B	✓	✓	✓	✓	✓	✓
1107A	✓	✓	✓	✓	✓	✓
1108A	✓	✓	✓	✓	✓	✓
1109A	✓	✓	✓	✓	✓	✓
1109B	✓	✓	✓	✓	✓	✓
1110A	✓	✓	✓	✓	✓	✓
1111A	✓	✓	✓	✓	✓	✓

[a] Sample was collected in December 2015 due to insufficient sample volume in June 2015.

Table B-9. 2015 Groundwater Radiological Data – SDA 1100-Series Wells

Blank entries indicate a result was not obtained, typically due to insufficient sample volume. Duplicate samples on the same date indicate a field duplicate was collected and analyzed.

Source: NYSERDA

Sample Location	Sample Date	Gross Alpha (µCi/mL)	Q	Gross Beta (µCi/mL)	Q	Tritium (µCi/mL)	Q
1101A	06/09/15	1.05E-09±1.24E-09	U	2.16E-09±9.08E-10		7.91E-08±5.33E-08	U
1101A	12/01/15	2.91E-09±1.56E-09	J	-8.35E-10±9.22E-10	U	8.47E-08±6.27E-08	U
1101A	12/01/15	2.21E-08±5.70E-09	J	5.19E-09±1.60E-09		2.17E-08±6.11E-08	U
1101B	06/09/15	4.10E-09±1.40E-09		3.16E-09±1.06E-09		2.42E-08±4.85E-08	U
1101B	12/01/15	1.38E-09±8.61E-10	J	1.69E-09±6.59E-10		-1.19E-08±6.10E-08	U
1101C	06/09/15	6.80E-10±8.86E-10	U	2.88E-09±6.33E-10		2.80E-08±5.03E-08	U
1101C	12/01/15	-4.02E-10±6.30E-10	U	2.37E-09±7.61E-10		2.99E-08±6.20E-08	U
1102A	06/09/15	2.58E-09±1.20E-09		2.78E-09±7.73E-10		9.40E-08±5.56E-08	J
1102A	12/02/15	2.91E-09±1.51E-09	J	2.57E-09±1.05E-09		2.32E-07±6.92E-08	
1102B	06/09/15	1.03E-09±1.04E-09	U	9.24E-10±6.50E-10	U	7.67E-08±5.33E-08	U
1102B	12/02/15	-8.01E-10±9.63E-10	U	6.02E-10±6.82E-10	U	2.77E-08±6.14E-08	U
1103A	06/10/15	8.75E-09±2.19E-09		6.43E-09±1.03E-09		1.14E-07±5.52E-08	
1103A	12/03/15	1.09E-08±3.23E-09		6.33E-09±2.41E-09		3.98E-08±6.21E-08	U
1103B	06/10/15	1.29E-09±1.25E-09	U	2.42E-09±1.25E-09	J	-3.24E-08±4.56E-08	U
1103B	12/03/15	2.44E-09±1.41E-09	J	3.72E-09±1.24E-09		-4.76E-08±6.04E-08	U
1103C	06/08/15	-3.51E-10±1.17E-09	U	2.48E-09±8.98E-10		-2.36E-08±4.62E-08	U
1103C	12/01/15	4.30E-10±1.00E-09	U	2.91E-09±1.03E-09		3.38E-08±6.18E-08	U
1104A	06/10/15	4.64E-09±1.33E-09		3.81E-09±1.00E-09		9.96E-08±5.43E-08	J
1104A	06/10/15	4.66E-09±1.68E-09		1.97E-09±7.46E-10		5.07E-08±5.13E-08	U
1104A	12/02/15	2.70E-09±1.28E-09		2.07E-09±1.01E-09		1.00E-07±6.30E-08	U
1104B	06/10/15	4.33E-09±1.20E-09		2.71E-09±7.57E-10		-2.59E-08±4.63E-08	U
1104B	12/02/15	1.50E-09±8.93E-10	J	1.31E-09±6.92E-10	J	4.59E-08±6.24E-08	U
1104C	06/08/15	4.15E-09±6.61E-09	UJ	3.57E-09±3.62E-09	UJ	-2.40E-08±4.66E-08	U
1104C	12/01/15	8.37E-09±2.64E-09		4.84E-09±3.62E-09	U	6.56E-08±6.27E-08	U
1105A	06/11/15	2.25E-09±1.26E-09	J	7.12E-10±9.27E-10	U	4.99E-08±5.05E-08	U
1105A	12/02/15	8.83E-11±7.59E-10	U	1.45E-09±6.78E-10		1.17E-07±6.43E-08	J
1105B	06/11/15	1.86E-09±1.06E-09	J	5.24E-10±6.30E-10	U	8.53E-08±5.68E-08	U

B-9 continued.

Sample Location	Sample Date	Gross Alpha (µCi/mL)	Q	Gross Beta (µCi/mL)	Q	Tritium (µCi/mL)	Q
1105B	12/02/15	1.07E-09±8.09E-10	U	9.74E-10±5.69E-10	J	-7.37E-08±6.05E-08	UJ
1106A	06/11/15	3.27E-09±1.13E-09		2.68E-09±6.98E-10		2.18E-07±6.11E-08	
1106A	12/03/15	5.09E-09±2.27E-09		-5.37E-10±1.25E-09	U	1.60E-07±6.65E-08	
1106B	06/11/15	5.86E-10±1.13E-09	U	2.61E-09±1.09E-09		2.56E-08±5.04E-08	U
1106B	12/03/15	2.53E-09±1.56E-09	J	2.31E-09±1.12E-09		0.00E+00±6.11E-08	U
1107A	06/12/15	2.96E-09±2.49E-09	UJ	1.87E-08±1.84E-09		4.41E-06±1.78E-07	
1107A	12/04/15	6.46E-09±2.16E-09		2.29E-08±6.60E-09		4.46E-06±4.71E-07	
1108A	06/09/15	3.95E-09±1.47E-09		4.20E-09±1.16E-09		7.44E-08±5.25E-08	U
1108A	12/03/15	4.38E-09±1.87E-09		7.81E-09±2.15E-09		1.26E-07±6.62E-08	J
1109A	06/11/15	2.74E-09±1.01E-09		2.31E-09±6.70E-10		1.13E-07±5.48E-08	
1109A	12/03/15	3.95E-09±1.54E-09		2.42E-09±1.03E-09		2.11E-07±6.79E-08	
1109B	06/12/15	8.60E-10±7.63E-10	U	1.52E-09±6.84E-10		1.41E-07±5.64E-08	
1109B	12/03/15	1.71E-09±1.04E-09	J	1.73E-09±7.64E-10		1.28E-07±6.51E-08	J
1110A	06/08/15	9.95E-09±2.93E-09		6.23E-09±1.47E-09		8.54E-08±5.33E-08	U
1110A	12/01/15	1.42E-08±4.72E-09		8.75E-09±2.43E-09		4.99E-08±6.24E-08	U
1111A	06/12/15	7.79E-09±1.60E-09		3.72E-09±7.91E-10		9.55E-08±5.53E-08	J
1111A	12/04/15	8.10E-09±2.58E-09		6.10E-09±1.99E-09		2.72E-07±6.88E-08	J

Table B-9 continued.

Sample Location	Sample Date	Actinium-228 (µCi/mL)	Q	Bismuth-214 (µCi/mL)	Q	Carbon-14 (µCi/mL)	Q
1101A	06/09/15	1.15E-08±2.22E-08	U	2.01E-08±1.42E-08	U	-1.80E-08±2.07E-08	U
1101B	06/09/15	-1.05E-08±2.22E-08	U	7.35E-09±1.72E-08	U	-1.99E-08±2.06E-08	U
1101C	06/09/15	9.65E-09±1.28E-08	U	-2.45E-09±6.76E-09	U	-9.67E-09±2.09E-08	U
1102A	06/09/15	-2.18E-08±2.29E-08	U	2.11E-08±1.17E-08	U	-1.16E-08±2.09E-08	U
1102B	06/09/15	4.59E-09±1.91E-08	U	4.38E-09±9.27E-09	U	-1.48E-08±2.08E-08	U
1103A	06/10/15	6.74E-09±1.57E-08	U	1.48E-08±1.43E-08	U	9.43E-09±2.16E-08	U
1103B	06/10/15	-8.59E-09±9.75E-09	U	4.03E-09±8.05E-09	U	-1.48E-08±2.09E-08	U
1103C	12/01/15					1.07E-08±2.58E-08	U
1104A	06/10/15	-1.35E-10±1.76E-08	U	1.08E-08±1.23E-08	U	-1.19E-08±2.09E-08	U
1104A	06/10/15	-3.44E-10±2.17E-08	U	-2.75E-09±1.11E-08	U	-1.49E-08±2.08E-08	U
1104B	06/10/15	1.02E-08±1.18E-08	U	1.10E-08±1.04E-08	U	7.30E-10±2.13E-08	U
1104C	12/01/15	-9.26E-10±6.94E-09	U	-5.21E-09±7.58E-09	U	1.76E-08±2.73E-08	U
1105A	06/11/15	-2.67E-09±1.08E-08	U	3.81E-09±6.13E-09	U	-8.78E-09±2.10E-08	U
1105B	06/11/15	3.89E-09±1.62E-08	U	6.17E-09±1.25E-08	U	1.73E-10±2.13E-08	U
1106A	06/11/15	-5.01E-09±1.83E-08	U	8.23E-09±1.36E-08	U	-8.99E-09±2.10E-08	U
1106B	06/11/15	-3.27E-09±1.80E-08	U	7.19E-09±9.16E-09	U	-9.78E-09±2.10E-08	U
1107A	06/12/15	1.48E-08±1.07E-08	U	4.42E-09±8.96E-09	U	1.08E-08±2.16E-08	U
1108A	06/09/15	-2.51E-08±2.61E-08	U	2.67E-08±1.75E-08	UJ	8.20E-09±2.16E-08	U
1109A	06/11/15	-5.67E-09±2.12E-08	U	-4.65E-09±1.23E-08	U	3.82E-09±2.14E-08	U
1109B	06/12/15	-9.16E-09±1.26E-08	U	1.62E-09±5.87E-09	U	-2.61E-08±2.04E-08	U
1110A	06/08/15	1.27E-08±2.84E-08	U	8.34E-10±1.10E-08	U	-1.07E-08±2.09E-08	U
1111A	06/12/15	1.30E-08±1.88E-08	U	5.34E-09±8.03E-09	U	-2.08E-09±2.13E-08	U

Table B-9 continued.

Sample Location	Sample Date	Cesium-134 (µCi/mL)	Q	Cesium-137 (µCi/mL)	Q	Cobalt-57 (µCi/mL)	Q
1101A	06/09/15	4.93E-09±7.28E-09	U	-1.35E-09±5.41E-09	U	4.73E-09±4.33E-09	U
1101B	06/09/15	-4.45E-09±6.16E-09	U	-1.99E-09±5.71E-09	U	1.60E-09±4.81E-09	U
1101C	06/09/15	-1.59E-09±2.78E-09	U	4.98E-09±2.67E-09	U	1.13E-09±2.65E-09	U
1102A	06/09/15	-1.34E-09±5.25E-09	U	2.99E-09±5.37E-09	U	5.88E-09±4.22E-09	U
1102B	06/09/15	2.54E-09±3.24E-09	U	-3.03E-10±2.94E-09	U	-1.10E-09±3.04E-09	U
1103A	06/10/15	2.72E-09±3.93E-09	U	-2.00E-09±4.70E-09	U	-1.77E-09±2.25E-09	U
1103B	06/10/15	-6.69E-10±2.83E-09	U	2.05E-09±2.87E-09	U	5.44E-10±2.41E-09	U
1103C	06/10/15						
1104A	06/10/15	-9.36E-10±4.89E-09	U	7.48E-12±8.01E-09	U	1.92E-09±3.83E-09	U
1104A	06/10/15	4.37E-09±5.34E-09	U	-1.43E-09±5.17E-09	U	7.94E-11±3.92E-09	U
1104B	06/10/15	1.75E-09±3.16E-09	U	-4.08E-11±2.92E-09	U	-1.52E-09±3.09E-09	U
1104C	12/01/15	9.22E-10±1.69E-09	U	1.34E-09±1.74E-09	U	1.11E-11±7.14E-10	U
1105A	06/11/15	9.99E-10±2.80E-09	U	3.76E-09±3.19E-09	U	-2.69E-10±2.32E-09	U
1105B	06/11/15	6.13E-09±2.92E-09	U	-1.44E-09±4.08E-09	U	-5.49E-12±2.77E-09	U
1106A	06/11/15	4.02E-10±5.01E-09	U	2.71E-09±4.37E-09	U	-7.96E-10±3.35E-09	U
1106B	06/11/15	-1.12E-09±4.22E-09	U	-2.03E-09±4.24E-09	U	-1.40E-09±3.10E-09	U
1107A	06/12/15	2.03E-09±3.22E-09	U	5.18E-11±3.23E-09	U	-1.70E-10±3.02E-09	U
1108A	06/09/15	3.16E-09±6.73E-09	U	1.22E-09±6.19E-09	U	-1.19E-09±5.33E-09	U
1109A	06/11/15	-5.96E-09±4.92E-09	U	3.99E-09±8.65E-09	U	1.67E-09±3.62E-09	U
1109B	06/12/15	4.60E-10±2.10E-09	U	-1.45E-09±2.44E-09	U	1.10E-09±2.03E-09	U
1110A	06/08/15	-1.77E-09±4.69E-09	U	1.55E-09±4.24E-09	U	5.36E-09±3.59E-09	U
1111A	06/12/15	1.88E-09±2.76E-09	U	8.23E-11±2.76E-09	U	-1.12E-09±2.51E-09	U

Table B-9 continued.

Sample Location	Sample Date	Cobalt-60 (µCi/mL)	Q	Iodine-129 (µCi/mL)	Q	Lead-212 (µCi/mL)	Q
1101A	06/09/15	7.15E-10±6.35E-09	U	2.74E-10±4.64E-10	U	7.37E-09±1.24E-08	U
1101B	06/09/15	-7.12E-09±6.04E-09	U	1.56E-10±4.57E-10	U	9.92E-09±1.26E-08	U
1101C	06/09/15	7.29E-10±2.55E-09	U	5.07E-10±7.38E-10	U	1.56E-08±1.19E-08	UJ
1102A	06/09/15	4.85E-09±4.80E-09	U	1.49E-10±3.84E-10	U	5.67E-09±1.05E-08	U
1102B	06/09/15	-5.33E-10±2.80E-09	U	5.02E-11±3.12E-10	U	-5.83E-09±6.93E-09	U
1103A	06/10/15	6.73E-10±3.92E-09	U	3.12E-10±4.14E-10	U	7.00E-09±9.45E-09	U
1103B	06/10/15	4.30E-10±2.94E-09	U	4.71E-11±3.84E-10	U	7.60E-10±7.23E-09	U
1103C	06/10/15						
1104A	06/10/15	7.04E-11±5.62E-09	U	-2.73E-10±5.84E-10	U	7.03E-09±8.88E-09	U
1104A	06/10/15	4.81E-09±4.22E-09	U	-2.64E-11±2.46E-10	U	6.50E-09±1.34E-08	U
1104B	06/10/15	1.62E-09±2.54E-09	U	4.85E-10±6.40E-10	U	6.66E-09±7.05E-09	U
1104C	06/08/15			-1.39E-10±5.40E-10	U		
1104C	12/01/15	1.76E-10±1.36E-09	U			-2.43E-09±5.02E-09	U
1105A	06/11/15	-2.48E-10±2.27E-09	U	-4.43E-11±5.12E-10	U	-4.32E-09±5.60E-09	U
1105B	06/11/15	-2.62E-10±3.23E-09	U	1.62E-10±3.17E-10	U	-2.26E-09±6.19E-09	U
1106A	06/11/15	7.40E-10±4.09E-09	U	-4.53E-11±4.37E-10	U	6.55E-09±8.15E-09	U
1106B	06/11/15	-2.80E-09±4.63E-09	U	-3.92E-10±3.01E-10	U	-2.15E-09±9.36E-09	U
1107A	06/12/15	-2.45E-09±2.82E-09	U	3.38E-10±2.93E-10	U	2.72E-09±8.26E-09	U
1108A	06/09/15	2.26E-09±6.25E-09	U	2.80E-10±4.74E-10	U	-6.27E-09±1.20E-08	U
1109A	06/11/15	1.06E-09±5.80E-09	U	-2.62E-10±5.29E-10	U	8.95E-09±9.92E-09	U
1109B	06/12/15	-6.81E-10±2.63E-09	U	1.90E-10±5.05E-10	U	6.39E-09±5.78E-09	U
1110A	06/08/15	2.95E-10±5.25E-09	U	-5.86E-10±5.47E-10	U	3.15E-09±9.42E-09	U
1111A	06/12/15	1.20E-09±2.63E-09	U	-8.55E-11±4.96E-10	U	6.17E-09±7.22E-09	U

Table B-9 continued.

Sample Location	Sample Date	Lead-214 (µCi/mL)	Q	Potassium-40 (µCi/mL)	Q	Radium-224 (µCi/mL)	Q
1101A	06/09/15	1.57E-08±1.56E-08	U	5.96E-08±8.86E-08	U	5.32E-08±9.70E-08	U
1101B	06/09/15	2.92E-09±1.34E-08	U	8.84E-09±7.20E-08	U	1.94E-07±1.14E-07	U
1101C	06/09/15	1.58E-10±7.04E-09	U	-2.63E-08±2.93E-08	U	1.66E-07±1.27E-07	UJ
1102A	06/09/15	1.05E-08±1.32E-08	U	1.24E-08±8.92E-08	U	5.97E-08±1.76E-07	U
1102B	06/09/15	6.62E-09±1.29E-08	U	1.13E-08±3.76E-08	U	-1.15E-08±6.27E-08	U
1103A	06/10/15	1.32E-08±1.24E-08	U	2.21E-08±4.26E-08	U	6.06E-08±6.95E-08	U
1103B	06/10/15	6.15E-10±6.40E-09	U	2.40E-08±4.23E-08	U	8.08E-09±7.69E-08	U
1103C	06/10/15						
1104A	06/10/15	-3.90E-09±1.12E-08	U	-3.10E-08±6.07E-08	U	1.47E-09±9.67E-08	U
1104A	06/10/15	-4.06E-10±1.05E-08	U	-2.28E-08±6.22E-08	U	2.80E-09±9.09E-08	U
1104B	06/10/15	2.80E-09±8.44E-09	U	-2.80E-08±3.43E-08	U	-1.28E-08±6.54E-08	U
1104C	12/01/15	3.12E-09±3.59E-09	U	1.67E-08±1.91E-08	U	-3.65E-08±3.23E-08	UJ
1105A	06/11/15	-1.22E-09±6.44E-09	U	-1.66E-08±3.22E-08	U	-8.33E-09±4.89E-08	U
1105B	06/11/15	5.62E-09±7.95E-09	U	2.02E-08±4.53E-08	U	1.86E-08±5.86E-08	U
1106A	06/11/15	2.07E-09±1.10E-08	U	-1.07E-08±6.25E-08	U	2.32E-09±8.40E-08	U
1106B	06/11/15	9.31E-09±9.92E-09	U	-3.14E-08±4.29E-08	U	2.30E-07±1.48E-07	UJ
1107A	06/12/15	1.39E-08±9.82E-09	U	2.48E-08±3.30E-08	U	1.35E-08±7.04E-08	U
1108A	06/09/15	1.19E-08±2.56E-08	U	-6.65E-08±7.38E-08	U	7.63E-09±1.18E-07	U
1109A	06/11/15	6.71E-09±1.28E-08	U	5.52E-08±6.59E-08	U	5.16E-08±9.92E-08	U
1109B	06/12/15	1.35E-09±6.81E-09	U	6.15E-09±3.28E-08	U	2.42E-08±5.57E-08	U
1110A	06/08/15	-7.95E-09±1.04E-08	U	-4.78E-09±7.03E-08	U	7.31E-08±1.12E-07	U
1111A	06/12/15	-2.32E-09±6.84E-09	U	1.60E-08±3.50E-08	U	6.01E-08±6.36E-08	U

Table B-9 continued.

Sample Location	Sample Date	Radium-226 (µCi/mL)	Q	Strontium-90 (µCi/mL)	Q	Technetium-99 (µCi/mL)	Q
1101A	06/09/15	8.69E-09±1.55E-07	U	-5.53E-11±5.36E-10	U	-5.25E-11±2.38E-09	U
1101B	06/09/15	9.28E-08±2.22E-07	U	-2.12E-10±4.67E-10	U	1.45E-09±2.42E-09	U
1101C	06/09/15	1.57E-09±8.13E-08	U	5.00E-10±5.37E-10	U	1.79E-09±1.44E-09	U
1102A	06/09/15	-1.99E-09±1.21E-07	U	1.27E-10±5.35E-10	U	-1.46E-09±2.45E-09	U
1102B	06/09/15	1.98E-08±1.19E-07	U	7.88E-11±4.28E-10	U	7.07E-10±2.41E-09	U
1103A	06/10/15	6.21E-09±1.24E-07	U	-4.41E-10±4.84E-10	U	-3.52E-10±2.47E-09	U
1103B	06/10/15	2.58E-08±1.05E-07	U	-3.07E-10±4.53E-10	U	1.32E-11±2.43E-09	U
1103C	06/10/15						
1104A	06/10/15	2.92E-08±1.56E-07	U	8.58E-10±6.12E-10	U	-1.35E-09±2.38E-09	U
1104A	06/10/15	5.40E-08±1.67E-07	U	-4.55E-11±5.03E-10	U	-9.31E-10±2.42E-09	U
1104B	06/10/15	5.76E-08±9.94E-08	U	-4.85E-11±4.83E-10	U	-3.47E-11±2.46E-09	U
1104C	06/08/15			-1.63E-10±4.75E-10	U		
1104C	12/01/15	-2.18E-08±3.96E-08	U				
1105A	06/11/15	-4.80E-08±6.50E-08	U	5.32E-11±5.33E-10	U	-2.91E-10±2.55E-09	U
1105B	06/11/15	5.88E-08±1.20E-07	U	4.11E-10±5.64E-10	U	-4.37E-10±2.44E-09	U
1106A	06/11/15	-6.91E-08±1.09E-07	U	3.60E-11±5.05E-10	U	-2.11E-10±2.42E-09	U
1106B	06/11/15	-3.78E-08±9.55E-08	U	1.46E-10±5.41E-10	U	9.60E-11±2.55E-09	U
1107A	06/12/15	9.32E-08±1.18E-07	U	6.14E-09±8.30E-10		3.52E-09±2.49E-09	U
1108A	06/09/15	2.50E-08±1.98E-07	U	4.75E-10±4.93E-10	U	-6.67E-10±2.11E-09	U
1109A	06/11/15	9.29E-08±1.27E-07	U	-3.75E-10±4.68E-10	U	5.95E-11±2.35E-09	U
1109B	06/12/15	-5.56E-08±6.70E-08	U	-5.63E-11±4.84E-10	U	7.79E-10±1.40E-09	U
1110A	06/08/15	2.86E-08±1.29E-07	U	-4.71E-10±5.13E-10	U	-4.99E-10±1.71E-09	U
1111A	06/12/15	-7.91E-08±7.01E-08	U	-2.12E-10±5.10E-10	U	-8.91E-10±2.36E-09	U

Table B-9 continued.

Sample Location	Sample Date	Thallium-208 (µCi/mL)	Q	Thorium-234 (µCi/mL)	Q	Uranium-235 (µCi/mL)	Q
1101A	06/09/15	3.66E-09±1.22E-08	U	-1.99E-07±1.88E-07	U	-6.32E-08±3.75E-08	U
1101B	06/09/15	5.25E-09±6.96E-09	U	3.59E-07±5.78E-07	U	4.14E-09±5.49E-08	U
1101C	06/09/15	-1.96E-09±3.24E-09	U	3.55E-08±2.04E-07	U	1.04E-09±2.21E-08	U
1102A	06/09/15	-1.63E-09±6.10E-09	U	-2.16E-07±3.47E-07	U	-2.01E-08±3.29E-08	U
1102B	06/09/15	-2.32E-09±3.92E-09	U	-1.31E-07±1.77E-07	U	5.19E-09±2.40E-08	U
1103A	06/10/15	-9.12E-10±5.04E-09	U	-9.16E-09±7.42E-08	U	-4.67E-09±1.95E-08	U
1103B	06/10/15	-6.87E-10±3.15E-09	U	-1.88E-08±1.17E-07	U	-2.95E-09±1.96E-08	U
1103C	06/10/15						
1104A	06/10/15	2.59E-09±6.79E-09	U	3.97E-08±2.76E-07	U	1.45E-08±3.07E-08	U
1104A	06/10/15	-2.97E-09±5.83E-09	U	3.55E-07±3.81E-07	UJ	-1.96E-08±3.03E-08	U
1104B	06/10/15	6.25E-10±3.42E-09	U	8.04E-08±2.84E-07	U	4.35E-10±2.56E-08	U
1104C	06/08/15						
1104C	12/01/15	8.89E-09±2.57E-09	J	0.00E-00±0.00E-00	R	9.95E-09±2.07E-09	
1105A	06/11/15	9.44E-11±2.93E-09	U	-2.94E-08±1.02E-07	U	-5.81E-09±2.04E-08	U
1105B	06/11/15	-1.14E-09±2.86E-09	U	7.51E-09±1.58E-07	U	2.00E-09±2.03E-08	U
1106A	06/11/15	-2.12E-09±5.23E-09	U	4.78E-08±1.91E-07	U	3.06E-09±3.05E-08	U
1106B	06/11/15	2.41E-09±4.83E-09	U	-7.09E-08±8.42E-08	U	1.51E-08±2.77E-08	U
1107A	06/12/15	2.24E-09±4.87E-09	U	8.96E-08±2.95E-07	U	-7.97E-09±2.31E-08	U
1108A	06/09/15	-9.79E-10±7.46E-09	U	-5.02E-08±4.26E-07	U	-1.23E-08±3.87E-08	U
1109A	06/11/15	4.93E-09±5.71E-09	U	2.12E-09±2.73E-07	U	7.05E-09±3.86E-08	U
1109B	06/12/15	5.12E-11±3.20E-09	U	3.61E-08±2.23E-07	U	1.11E-08±1.75E-08	U
1110A	06/08/15	2.80E-09±6.89E-09	U	1.24E-08±3.60E-07	U	-1.79E-09±2.96E-08	U
1111A	06/12/15	5.45E-10±3.36E-09	U	-1.07E-07±1.21E-07	U	1.95E-08±3.07E-08	U

Key for Qualifier Codes (Q):

J = Analyte identified. Associated result is considered estimated or uncertain.
R = A rejected result. The data are determined to be unusable.
U = Not detected above minimum detectable concentration (MDC) and/or 2-sigma uncertainty.
UJ = Not detected above MDC and/or 2-sigma uncertainty, which may be considered estimated or uncertain.

Table B-10. 2015 Groundwater Field Parameter Data - SDA 1100-Series Wells

Blank entries indicate a result was not obtained, typically due to insufficient sample volume. Duplicate samples on the same date indicate a field duplicate was collected and analyzed.

Source: NYSERDA

Sample Location	Sample Date	Conductivity (µmhos/cm)	Q	pH	Q	Temperature (Deg C)	Q	Turbidity (NTU)	Q
1101A	06/09/15	718		6.97		11.37		9.54	
1101A	12/01/15	711		7.55		11.37		0.96	
1101A	12/01/15	711		7.55		11.37		0.96	
1101B	06/09/15	570		7.09		12.06		6.44	
1101B	12/01/15	553		7.6		10.57		2.09	
1101C	06/09/15	346		7.39		11.63		310	
1101C	12/01/15	341		7.71		9.89		59.5	
1102A	06/09/15							7.21	
1102A	12/02/15	701		7.24		11.96		1.95	
1102B	06/09/15	544		7.07		11.74		11.8	
1102B	12/02/15	508		6.72		10.59		4.31	
1103A	06/10/15	1241		7.06		15.11		35.8	
1103A	12/03/15	1278		6.67		11.53		4.35	
1103B	06/10/15	627		7.37		13.64		9.11	
1103B	12/03/15	624		7.33		10.16		1.06	
1103C	06/10/15								
1103C	12/01/15								
1104A	06/10/15	686		7.34		15.49		2.27	
1104A	06/10/15	686		7.34		15.49		2.27	
1104A	12/02/15	692		7.27		11.67		1.26	
1104B	06/10/15	547		7.56		17.3		3.16	
1104B	12/02/15	533		7.37		10.7		0.29	
1104C	06/08/15								
1104C	12/01/15								
1105A	06/11/15	635		7.49		12.56			

Table B-10 continued.

Sample Location	Sample Date	Conductivity (µmhos/cm)	Q	pH	Q	Temperature (Deg C)	Q	Turbidity (NTU)	Q
1105A	12/02/15	612		7.2		9.96		23.4	
1105B	06/11/15	588		7.4		15.59			
1105B	12/02/15	576		7.11		9.27		11.9	
1106A	06/11/15	684		7.47		14.05		1.57	
1106A	12/03/15	702		7.23		11.2		0.7	
1106B	06/11/15	675		7.37		15.81		30.5	
1106B	12/03/15	683		7.08		10.7		23.4	
1107A	06/12/15	2001		6.82		13.64		0.55	
1107A	12/04/15	1918		6.63		11		0.1	
1108A	06/09/15	782		7.11		10.15		413	
1108A	12/03/15	796		7.54		10.42		37.4	
1109A	06/11/15	582		7.36		16.7		1.72	
1109A	12/03/15	624		7.65		12.96		0.05	
1109B	06/12/15	448		7.46		13.84		15.6	
1109B	12/03/15	435		7.6		11.61		1.84	
1110A	06/08/15	1393		7.08		15.48		301	
1110A	12/01/15	1344		7.37		12.27		27.9	
1111A	06/12/15	964		7.07		16.68		3.2	
1111A	12/04/15	932		7.25		10.71		0.5	

Key:

Q Qualifier Code

Appendix C – Surface and Stormwater Data

Table C-1. 2015 SDA Surface Water Data - Lagoon Road Creek (WNNDADR)

Duplicate samples on the same date indicate a field duplicate was collected and analyzed.

Source: NYSERDA

Sample Date	Gross alpha (µCi/mL)	Q	Gross beta (µCi/mL)	Q	Tritium (µCi/mL)	Q
03/24/15	6.61E-10±7.86E-10	U	3.18E-08±1.51E-09		5.00E-07±7.20E-08	
05/18/15	-1.30E-10±8.86E-10	U	3.39E-08±1.42E-09		4.36E-07±6.65E-08	
08/31/15	4.07E-10±6.19E-10	U	2.05E-08±1.00E-09		4.88E-07±7.39E-08	
11/19/15	5.38E-10±3.31E-10	J	1.25E-08±2.99E-09		1.44E-07±1.06E-07	U

Table C-2. 2015 SDA Surface Water Data - Erdman Brook (WNERB53)

Source: NYSERDA

Sample Date	Gross alpha (µCi/mL)	Q	Gross beta (µCi/mL)	Q	Tritium (µCi/mL)	Q
03/24/15	1.62E-09±1.00E-09	J	4.93E-09±7.64E-10		5.38E-08±4.98E-08	U
05/18/15	2.78E-10±8.14E-10	U	5.02E-09±7.59E-10		7.15E-08±4.75E-08	U
08/31/15	5.90E-10±8.02E-10	U	7.24E-09±8.68E-10		1.92E-07±5.85E-08	
11/19/15	3.02E-10±6.68E-10	U	5.49E-09±1.78E-09		-3.66E-08±1.02E-07	U

Table C-3. 2015 SDA Surface Water Data - Frank's Creek (WNFRC67)

Source: NYSERDA

Sample Date	Gross alpha (µCi/mL)	Q	Gross beta (µCi/mL)	Q	Tritium (µCi/mL)	Q
03/24/15	9.32E-10±6.90E-10	U	1.15E-09±6.40E-10	J	2.34E-08±4.82E-08	U
03/24/15	1.15E-09±8.01E-10	U	1.24E-09±9.09E-10	U	2.78E-08±4.80E-08	U
05/18/15	-6.01E-10±5.32E-10	U	1.20E-09±4.96E-10		4.91E-08±4.63E-08	U
08/31/15	1.92E-09±1.32E-09	U	3.95E-09±1.01E-09		3.68E-07±6.73E-08	
11/19/15	2.64E-10±4.13E-10	U	2.34E-09±7.31E-10		6.50E-08±1.04E-07	U

Table C-4. 2015 SDA Surface Water Data - Frank's Creek (WNDCELD)

Duplicate samples on the same date indicate a field duplicate was collected and analyzed.

Source: NYSERDA

Sample Date	Gross alpha (µCi/mL)	Q	Gross beta (µCi/mL)	Q	Tritium (µCi/mL)	Q
03/24/15	5.10E-10±5.77E-10	U	1.58E-09±6.43E-10		5.59E-08±5.03E-08	U
05/18/15	-5.21E-10±9.53E-10	U	1.18E-10±9.45E-10	U	2.85E-08±4.49E-08	U
08/31/15	1.99E-10±8.79E-10	U	3.44E-09±8.39E-10		-7.92E-09±4.84E-08	U
08/31/15	-1.30E-10±9.49E-10	U	2.87E-09±9.16E-10		1.08E-08±5.09E-08	U
11/19/15	3.55E-10±4.77E-10	U	1.77E-09±6.44E-10		2.56E-08±1.04E-07	U

Table C-5. 2015 SDA Surface Water Data - Buttermilk Creek: Upgradient of the SDA (WFBCBKG)

Source: NYSERDA

Sample Date	Gross alpha (µCi/mL)	Q	Gross beta (µCi/mL)	Q	Tritium (µCi/mL)	Q
03/24/15	4.54E-10±5.02E-10	U	1.69E-09±6.08E-10		3.08E-08±4.93E-08	U
05/18/15	5.06E-10±6.34E-10	U	6.13E-10±9.01E-10	U	2.30E-08±4.44E-08	U
08/31/15	-4.77E-10±7.35E-10	U	1.91E-09±9.39E-10		-2.07E-08±4.98E-08	U
11/19/15	5.76E-10±3.69E-10		2.07E-09±7.00E-10		2.27E-08±1.04E-07	U

Key for Qualifier Codes (Q):

J = Analyte identified. Associated result is considered estimated or uncertain.
U = Not detected above minimum detectable concentration (MDC) and/or 2-sigma uncertainty.
UJ = Not detected above MDC and/or 2-sigma uncertainty, which may be considered estimated or uncertain.

Table C-6. 2015 SDA Surface Water Data - Buttermilk Creek: Downgradient of the SDA (WFBCANL)

Source: NYSERDA

Sample Date	Gross Alpha (µCi/mL)	Q	Gross Beta (µCi/mL)	Q	Tritium (µCi/mL)	Q
08/31/15	-7.80E-10±6.66E-10	U	1.17E-09±5.52E-10		7.53E-09±4.95E-08	U

Table C-7. 2015 SDA Stormwater Radiological Data - Outfall Location W01

Duplicate samples on the same date indicate a field duplicate was collected and analyzed. Entries are blank for locations/dates for which water elevation was not measured.

Source: NYSERDA

Sample Date	Gross alpha (µCi/mL)	Q	Gross beta (µCi/mL)	Q	Tritium (µCi/mL)	Q
06/05/15	5.15E-10±1.08E-09	U	1.12E-08±2.18E-09		8.53E-07±6.69E-08	
08/20/15	1.02E-10±8.62E-10	U	6.59E-10±1.11E-09	U	2.09E-07±6.13E-08	

Sample Date	Beryllium-7 (µCi/mL)	Q	Cesium-137 (µCi/mL)	Q
06/05/15	9.99E-08±4.82E-08		-5.01E-11±2.69E-09	U
08/2015			3.99E-11±2.41E-09	U

Sample Date	Cobalt-60 (µCi/mL)	Q	Potassium-40 (µCi/mL)	Q
06/05/15	-1.13E-09±2.69E-09	U	1.27E-08±2.93E-08	U
08/20/15	-2.72E-11±2.67E-09	U	2.99E-09±3.30E-08	U

Key for Qualifier Codes (Q):

J = Analyte identified. Associated result is considered estimated or uncertain.
U = Not detected above minimum detectable concentration (MDC) and/or 2-sigma uncertainty.
UJ = Not detected above MDC and/or 2-sigma uncertainty, which may be considered estimated or uncertain.

Table C-8. 2015 SDA Stormwater Chemical Physical Data - Outfall Location W01

Blank entries indicate a result was not obtained, typically because it was not required. Duplicate samples on the same date indicate a field duplicate was collected and analyzed. Data are reported herein relative to the laboratory practical quantitation limit.

Source: NYSERDA

Sample Date	Sample Type	BOD (mg/L)	Q	COD (mg/L)	Q	Nitrogen, Total (mg/L)	Q	Oil & Grease (mg/L)	Q
06/05/15	Grab	38.3		94.5		2.72	J	5.0	U
06/05/15	Ambient Rain								
06/05/15	Composite	25.6		77.4		2.48	J		
08/20/15	Grab	4.5		19.5	J	0.61	J	5.0	U
08/20/15	Ambient Rain								
08/20/15	Composite	2.0	U	6.2	J	0.69	J		

Sample Date	Sample Type	Total Phosphorus (mg/L)	Q	TSS (mg/L)	Q	pH (SU)	Q	Temp (Deg C)	Q
06/05/15	Grab	0.240		57.6		6.19		26.0	
06/05/15	Ambient Rain					5.00		26.0	
06/05/15	Composite	0.210		14.0					
08/20/15	Grab	0.014		4.0	U	5.11		24.2	
08/20/15	Ambient Rain					3.78		24.3	
08/20/15	Composite	0.010	U	4.0	U				

Key for Qualifier Codes (Q):

J = Analyte identified. Associated result is considered estimated or uncertain.
U = Not detected above associated value.
UJ = Not detected above associated value, which may be considered estimated or uncertain.

Appendix D – Overland Gamma Radiation Survey & Thermoluminescent Dosimeter Data

Table D-1. 2015 Overland Gamma Radiation Survey Results

Source: NYSERDA

	April 29 (µrem/hr)		Sept. 17 (µrem/hr)	
Location	**1m**	**1cm**	**1m**	**1cm**
P-1	8	8	14	13
P-2	7	9	12	14
P-3	7	9	16	16
P-4	8	10	13	11
P-5	6	8	11	10
P-6	6	7	13	15
P-7	6	7	13	13
P-8	7	7	9	10
P-9	7	8	12	11
P-10	8	7	11	12
P-11	7	5	8	10
P-12	7	5	10	10
P-13	9	9	12	11
P-14	5	6	11	11
P-15	8	11	13	14
P-16	10	8	14	13
SDA2s	9	10	16	17
SDA2n	9	10	14	14
SDA3s	6	10	18	13
SDA3n	8	10	17	17
SDA4s	10	11	14	13
SDA4n	8	9	15	13
T1s	8	12	10	11
T2n	12	8	10	10
T3s	7	10	12	11
T3n	9	10	13	12
T4s	10	10	13	14
T4n	10	10	14	14

Table D-1 continued.

	April 29 (µrem/hr)		Sept. 17 (µrem/hr)	
Location[a]	**1m**	**1cm**	**1m**	**1cm**
T5s	11	11	12	11
T5n	7	7	13	13
T6s	10	12	15	17
T6n	9	10	15	12
T7s	10	12	15	18
T7n	10	12	13	12
T8s	7	8	12	12
T8n	8	10	12	12
T9s	10	10	14	12
T9n	9	11	14	12
T10s	8	8	10	10
T10n	9	12	13	13
T11s	10	7	11	13
T11n	9	9	12	12
T12s	7	7	10	10
T12n	12	10	10	9
T13s	9	8	12	11
T13n	11	7	14	12
T14s	8	6	12	13
T14n	8	7	15	15
Tank T-1	5	5	7	9
DC-(G)[b]	4	8	8	9
DC-dr[b]	5	4	7	7

[a] SDA perimeter locations (P-1 through P-16) are identified on Figure 2-6. Measurements were made at one meter (1 m) and one centimeter (1 cm) from the ground, tank or building surface.

[b] DC-(G) and DC-dr are located (at the Drum Cell) on the WVDP premises adjacent to the SDA. The Drum Cell was used to store low-level radioactive waste drums; however, the waste was removed and shipped for off-site disposal in 2007. The DC-(G) and DC-dr measurements were made at locations on the north side and west roll-up door, respectively.

Table D-2. 2015 Thermoluminescent Dosimeter Data

Source: NYSERDA

Location	1st Qtr (mR/Qtr)	Q	2nd Qtr (mR/Qtr)	Q	3rd Qtr (mR/Qtr)	Q	4th Qtr (mR/Qtr)	Q
DNTLD19 (SDA E. Fence)	15.0±2.7		14.7±2.7		20.0±3.6		17.0±3.1	
DNTLD33 (SDA SW Corner)	13.9±2.6		15.5±2.9		21.6±3.9		17.1±3.1	
DNTLD43 (SDA West Gate)	14.2±2.6		11.4±2.1		15.8±2.8		12.4±2.3	
DNTLD53 (SDA West Gate)	17.6±3.2		17.7±3.3		21.8±3.9		18.8±3.4	
NYTLDBK (Background Location)	13.0±2.4		13.3±2.5		16.4±2.9		15.6±2.9	

Appendix E – Precipitation

Table E-1. First Quarter 2015 SDA Precipitation Data (Liquid Rainfall Equivalent)

Source: NYSERDA

January 2015	Precipitation (inches)	February 2015	Precipitation (inches)	March 2015	Precipitation (inches)
1/1/2015	0.03	2/1/2015	0.11	3/1/2015	0.17
1/2/2015	0.15	2/2/2015	0.22	3/2/2015	0.07
1/3/2015	0.26	2/3/2015	0	3/3/2015	0.23
1/4/2015	0.44	2/4/2015	0.17	3/4/2015	0.02
1/5/2015	0.06	2/5/2015	0.03	3/5/2015	0
1/6/2015	0.05	2/6/2015	0.04	3/6/2015	0
1/7/2015	0.21	2/7/2015	0.01	3/7/2015	0.09
1/8/2015	0.12	2/8/2015	0.23	3/8/2015	0.01
1/9/2015	0.26	2/9/2015	0.22	3/9/2015	0
1/10/2015	0.05	2/10/2015	0	3/10/2015	0.02
1/11/2015	0	2/11/2015	0.09	3/11/2015	0
1/12/2015	0.28	2/12/2015	0.11	3/12/2015	0
1/13/2015	0	2/13/2015	0	3/13/2015	0
1/14/2015	0.01	2/14/2015	0.11	3/14/2015	0.17
1/15/2015	0	2/15/2015	0	3/15/2015	0.03
1/16/2015	0.06	2/16/2015	0	3/16/2015	0.07
1/17/2015	0.01	2/17/2015	0	3/17/2015	0.21
1/18/2015	0.18	2/18/2015	0.07	3/18/2015	0.02
1/19/2015	0.11	2/19/2015	0.03	3/19/2015	0
1/20/2015	0	2/20/2015	0	3/20/2015	0.03
1/21/2015	0.06	2/21/2015	0.09	3/21/2015	0.41
1/22/2015	0.02	2/22/2015	0.01	3/22/2015	0.01
1/23/2015	0	2/23/2015	0	3/23/2015	0
1/24/2015	0.13	2/24/2015	0	3/24/2015	0
1/25/2015	0.03	2/25/2015	0.06	3/25/2015	0.04
1/26/2015	0.15	2/26/2015	0.03	3/26/2015	0.38
1/27/2015	0.06	2/27/2015	0	3/27/2015	0.02
1/28/2015	0	2/28/2015	0	3/28/2015	0.01
1/29/2015	0.21			3/29/2015	0
1/30/2015	0.11			3/30/2015	0.06
1/31/2015	0			3/31/2015	0.03
Total	**3.05**	**Total**	**1.63**	**Total**	**2.1**

Table E-2. Second Quarter 2015 SDA Precipitation Data (Liquid Rainfall Equivalent)

Source: NYSERDA

April 2015	Precipitation (inches)	May 2015	Precipitation (inches)	June 2015	Precipitation 2015
4/1/2015	0	5/1/2015	0	6/1/2015	0.04
4/2/2015	0.33	5/2/2015	0	6/2/2015	0
4/3/2015	0.48	5/3/2015	0	6/3/2015	0
4/4/2015	0.1	5/4/2015	0	6/4/2015	0
4/5/2015	0.22	5/5/2015	0.11	6/5/2015	0.02
4/6/2015	0.02	5/6/2015	0.02	6/6/2015	0
4/7/2015	0	5/7/2015	0	6/7/2015	0.01
4/8/2015	0.55	5/8/2015	0	6/8/2015	0.7
4/9/2015	0.21	5/9/2015	0.34	6/9/2015	0.45
4/10/2015	0.11	5/10/2015	0.08	6/10/2015	0
4/11/2015	0.14	5/11/2015	0.44	6/11/2015	0
4/12/2015	0	5/12/2015	0.07	6/12/2015	0.76
4/13/2015	0.37	5/13/2015	0.01	6/13/2015	0
4/14/2015	0	5/14/2015	0	6/14/2015	1.18
4/15/2015	0	5/15/2015	0.13	6/15/2015	0.5
4/16/2015	0.08	5/16/2015	0.38	6/16/2015	0.36
4/17/2015	0.27	5/17/2015	0	6/17/2015	0
4/18/2015	0	5/18/2015	0.17	6/18/2015	0.05
4/19/2015	0.01	5/19/2015	0.01	6/19/2015	0.12
4/20/2015	0.33	5/20/2015	0	6/20/2015	0
4/21/2015	0.02	5/21/2015	0	6/21/2015	0.02
4/22/2015	0.14	5/22/2015	0	6/22/2015	0
4/23/2015	0.15	5/23/2015	0	6/23/2015	0.36
4/24/2015	0.01	5/24/2015	0	6/24/2015	0
4/25/2015	0	5/25/2015	0	6/25/2015	0
4/26/2015	0	5/26/2015	0	6/26/2015	0
4/27/2015	0.05	5/27/2015	0.18	6/27/2015	0.95
4/28/2015	0	5/28/2015	0.04	6/28/2015	0.26
4/29/2015	0	5/29/2015	0	6/29/2015	0.04
4/30/2015	0	5/30/2015	0.97	6/30/2015	0.32
		5/31/2015	0.83		
Total	**3.59**	**Total**	**3.78**	**Total**	**6.14**

Table E-3. Third Quarter 2015 SDA Precipitation Data (Liquid Rainfall Equivalent)

Source: NYSERDA

July 2015	Precipitation (inches)	August 2015	Precipitation (inches)	September 2015	Precipitation 2015
7/1/2015	0.33	8/1/2015	0.01	9/1/2015	0
7/2/2015	0	8/2/2015	0	9/2/2015	0
7/3/2015	0	8/3/2015	0.02	9/3/2015	0
7/4/2015	0	8/4/2015	0.11	9/4/2015	0
7/5/2015	0	8/5/2015	0	9/5/2015	0
7/6/2015	0.02	8/6/2015	0	9/6/2015	0
7/7/2015	0.8	8/7/2015	0	9/7/2015	0
7/8/2015	0.09	8/8/2015	0	9/8/2015	0
7/9/2015	1.24	8/9/2015	0	9/9/2015	0.56
7/10/2015	0	8/10/2015	0.61	9/10/2015	0
7/11/2015	0	8/11/2015	0.83	9/11/2015	0
7/12/2015	0	8/12/2015	0.35	9/12/2015	0.98
7/13/2015	0	8/13/2015	0	9/13/2015	0.33
7/14/2015	3.9	8/14/2015	0	9/14/2015	0
7/15/2015	0.07	8/15/2015	0.71	9/15/2015	0
7/16/2015	0	8/16/2015	0	9/16/2015	0
7/17/2015	0	8/17/2015	0	9/17/2015	0
7/18/2015	0	8/18/2015	0.01	9/18/2015	0
7/19/2015	0	8/19/2015	0.03	9/19/2015	0.51
7/20/2015	0	8/20/2015	0.35	9/20/2015	0
7/21/2015	0.27	8/21/2015	0	9/21/2015	0
7/22/2015	0	8/22/2015	0	9/22/2015	0
7/23/2015	0	8/23/2015	0	9/23/2015	0
7/24/2015	0	8/24/2015	0	9/24/2015	0
7/25/2015	0.03	8/25/2015	0.04	9/25/2015	0
7/26/2015	0	8/26/2015	0.13	9/26/2015	0
7/27/2015	0	8/27/2015	0.01	9/27/2015	0
7/28/2015	0	8/28/2015	0	9/28/2015	0.24
7/29/2015	0	8/29/2015	0	9/29/2015	1.2
7/30/2015	0.47	8/30/2015	0	9/30/2015	0.76
7/31/2015	0	8/31/2015	0.05		
Total	**7.22**	**Total**	**3.26**	**Total**	**4.58**

Table E-4. Fourth Quarter 2015 SDA Precipitation Data (Liquid Rainfall Equivalent)

Source: NYSERDA

October 2015	Precipitation (inches)	November 2015	Precipitation (inches)	December 2015	Precipitation (inches)
10/1/2015	0	11/1/2015	0.05	12/1/2015	0.02
10/2/2015	0	11/2/2015	0	12/2/2015	0.23
10/3/2015	0.16	11/3/2015	0	12/3/2015	0.08
10/4/2015	0	11/4/2015	0	12/4/2015	0
10/5/2015	0	11/5/2015	0	12/5/2015	0
10/6/2015	0	11/6/2015	0.33	12/6/2015	0
10/7/2015	0	11/7/2015	0.04	12/7/2015	0
10/8/2015	0	11/8/2015	0	12/8/2015	0
10/9/2015	1.04	11/9/2015	0	12/9/2015	0
10/10/2015	0	11/10/2015	0.51	12/10/2015	0
10/11/2015	0	11/11/2015	0.07	12/11/2015	0
10/12/2015	0.09	11/12/2015	0.41	12/12/2015	0.02
10/13/2015	0.44	11/13/2015	1.05	12/13/2015	0
10/14/2015	0.12	11/14/2015	0	12/14/2015	0.41
10/15/2015	0.38	11/15/2015	0	12/15/2015	0.03
10/16/2015	0.16	11/16/2015	0	12/16/2015	0.01
10/17/2015	0.01	11/17/2015	0	12/17/2015	0.18
10/18/2015	0.03	11/18/2015	0.02	12/18/2015	0.33
10/19/2015	0	11/19/2015	0.07	12/19/2015	0.16
10/20/2015	0	11/20/2015	0	12/20/2015	0
10/21/2015	0	11/21/2015	0.01	12/21/2015	0.02
10/22/2015	0.03	11/22/2015	0.14	12/22/2015	0.66
10/23/2015	0	11/23/2015	0	12/23/2015	0
10/24/2015	0.16	11/24/2015	0.04	12/24/2015	0.01
10/25/2015	0.17	11/25/2015	0	12/25/2015	0
10/26/2015	0	11/26/2015	0	12/26/2015	0.1
10/27/2015	0	11/27/2015	0.18	12/27/2015	0.75
10/28/2015	0.88	11/28/2015	0.09	12/28/2015	0.32
10/29/2015	0.25	11/29/2015	0	12/29/2015	0.11
10/30/2015	0.05	11/30/2015	0	12/30/2015	0.01
10/31/2015	0			12/31/2015	0.19
Total	**3.97**	**Total**	**3.01**	**Total**	**3.64**

Appendix F – Ground Surface Elevation Data

Table F-1. 2014 and 2015 SDA North Slope Ground Surface Elevation Data – (Feet Above Mean Sea Level)

Source: NYSERDA

Location[a]	2014 Elevation[b]	Location[a]	2015 Elevation[b]
1	1345.86	1	1345.91
3	1343.99		
4	1345.42	4	1345.42
5	1349.87	5	1349.80
6	1355.91	6	1355.98
7	1348.37	7	1348.43
8	1356.65	8	1356.62
9	1363.12	9	1363.19
10	1368.68	10	1368.66
11	1375.66	11	1375.70
12	1358.93	12	1358.98
13	1367.69	13	1367.74
14	1371.64	14	1371.61
15	1373.54	15	1373.64
16	1371.28	16	1371.26
17	1370.64	17	1370.71
18	1357.46	18	1357.46
19	1349.44	19	1349.48
20	1348.99	20	1349.09
31	1363.92	31	1363.91
32	1350.81	32	1350.89
33	1351.95	33	1352.04
34	1362.79	34	1362.87
35	1350.86	35	1350.87
36	1362.99	36	1363.02
38	1364.53	38	1364.58
39	1365.32	39	1365.31
40	1361.40	40	1361.46

Table F-1 continued.

Location[a]	2014 Elevation[b]	Location[a]	2015 Elevation[b]
45	1363.47	45	1363.47
46	1364.83	46	1364.81
47	1357.95	47	1357.94
48	1355.38	48	1355.38
50	1346.21	50	1346.25
51	1344.30		
52	1359.75	52	1359.87
53	1373.67	53	1373.74
CP53	1375.74	CP53	1375.74

[a] Locations 1-20 and 30-40 were established in 1982 by the USGS and resurveyed in 1983. From 1983 to 1991, the North Slope was not surveyed. Locations 45-48 were established by NYSERDA in 1991 when the annual North Slope survey was reinstated. Locations 50-53 were added in December 2011. Gaps in location numbers are points that were discontinued or never used.

[b] Coordinate System: Horizontal datum is North American Datum of 1927 (NAD27), NY West Zone. Vertical datum is National Geodetic Vertical Datum of 1929 (NGVD29). Elevations were measured on November 13, 2014 and November 9, 2015, by Clear Creek Land Surveying, LLC.

Table F- 2. 2015 SDA Trench Cap Ground Surface Elevation Data – (Feet Above Mean Sea Level)

Source: NYSERDA

Trench	Location[a]	Elevation[b]	Trench	Location[a]	Elevation[b]	Trench	Location[a]	Elevation[b]
1&2	S-M	1393.61	6	S-M	1386.66	11	S-M	1386.19
1&2	1+0	1392.72	6	1+0	1389.09	11	1+0	1385.28
1&2	2+0	1391.75	6	N-M	1391.47	11	2+0	1386.41
1&2	3+0	1391.40				11	3+0	1387.34
1&2	4+0	1390.82	7	S-M	1386.73	11	4+0	1387.76
1&2	5+0	1389.73	7	0+42.25	1385.80	11	5+0	1388.01
1&2	6+0	1386.91	7	N-M	1385.59	11	N-M	1389.40
1&2	N-M	1384.56						
1&2	7+10	1380.45	8	S-M	1391.05	12	S-M	1386.17
1&2	7+20	1378.22	8	1+0	1388.12	12	1+0	1384.55
			8	2+0	1388.70	12	2+0	1385.76
3	S-M	1393.73	8	3+0	1388.44	12	3+0	1386.84
3	1+0	1393.25	8	4+0	1388.29	12	4+0	1387.51
3	2+0	1393.15	8	5+0	1388.36	12	5+0	1387.45
3	3+0	1391.89	8	N-M	1389.87	12	N-M	1390.32
3	4+0	1391.45						
3	5+0	1389.94	9	S-M	1389.28	13	S-M	1386.03
3	6+0	1387.22	9	1+0	1387.17	13	1+0	1383.17
3	N-M	1385.03	9	2+0	1387.91	13	2+0	1385.39
			9	3+0	1388.30	13	3+0	1386.30
4	S-M	1394.14	9	4+0	1388.92	13	4+0	1386.95
4	1+0	1392.24	9	5+0	1389.28	13	5+0	1387.25
4	2+0	1393.01	9	N-M	1390.62	13	6+0	1386.00
4	3+0	1392.40				13	N-M	1388.72
4	4+0	1392.25	10	S-M	1387.40			
4	5+0	1390.34	10	1+0	1386.16	14	S-M	1386.11
4	6+0	1388.07	10	2+0	1387.29	14	1+0	1383.92
4	N-M	1388.00	10	3+0	1387.85	14	2+0	1384.62
			10	4+0	1388.45	14	3+0	1385.71
5	S-M	1394.67	10	5+0	1388.57	14	4+0	1386.18
5	1+0	1392.48	10	N-M	1390.27	14	5+0	1385.67
5	2+0	1391.86				14	6+0	1385.14
5	3+0	1391.04				14	N-M	1385.40
5	4+0	1390.40						
5	5+0	1390.46						
5	6+0	1387.56						
5	N-M	1389.19						

Table F-2 continued.

[a] Location is given as X+Y where X is trench length in 100-foot increments plus Y in ft (e.g., 7+10 = 710 ft). N-M is located on the centerline mark of the north monument plaque at each trench. S-M is located on the centerline mark of the south monument plaque at each trench.

[b] Coordinate System: Horizontal datum is North American Datum of 1927 (NAD27), NY West Zone. Vertical datum is National Geodetic Vertical Datum of 1929 (NGVD29). Elevations were measured on November 5, 2015, by Clear Creek Land Surveying, LLC.

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